

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549

FORM S-3

REGISTRATION STATEMENT UNDER THE SECURITIES ACT OF 1933

SPECTRAL AI, INC.
(Exact name of registrant as specified in its charter)

Delaware

95-4484725

(State or other jurisdiction of
incorporation or organization)

(I.R.S. Employer
Identification Number)

2515 McKinney Avenue, Suite 1000
Dallas, TX 75201
972-499-4934

(Address, including zip code, and telephone number, including area code, of registrant's principal executive offices)

Vincent S. Capone, Esq.
Chief Financial Officer and General Counsel
2515 McKinney Avenue, Suite 1000
Dallas, TX 75201
(972) 499-4934

(Name, address, including zip code, and telephone number, including area code, of agent for service)

Copies of all communications, including communications sent to agent for service, should be sent to:

Herbert F. Kozlov Esq.
Lynwood E. Reinhardt, Esq.
Reed Smith LLP
599 Lexington Avenue
New York, New York 10022-7650
(212) 521-5400

Approximate date of commencement of proposed sale to the public: From time to time after the effective date of this Registration Statement.

If the only securities being registered on this Form are being offered pursuant to dividend or interest reinvestment plans, please check the following box:

If any of the securities being registered on this Form are to be offered on a delayed or continuous basis pursuant to Rule 415 under the Securities Act of 1933, other than securities offered only in connection with dividend or interest reinvestment plans, check the following box:

If this Form is filed to register additional securities for an offering pursuant to Rule 462(b) under the Securities Act, please check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

If this Form is a post-effective amendment filed pursuant to Rule 462(c) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

If this Form is a registration statement pursuant to General Instruction I.D. or a post-effective amendment thereto that shall become effective upon filing with the Commission pursuant to Rule 462(e) under the Securities Act, check the following box.

If this Form is a post-effective amendment to a registration statement filed pursuant to General Instruction I.D. filed to register additional securities or additional classes of securities pursuant to Rule 413(b) under the Securities Act, check the following box.

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company" and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer	<input type="checkbox"/>	Accelerated filer	<input type="checkbox"/>
Non-accelerated filer	<input checked="" type="checkbox"/>	Smaller reporting company	<input checked="" type="checkbox"/>
		Emerging growth company	<input checked="" type="checkbox"/>

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided to Section 7(a)(2)(B) of the Securities Act.

This registration statement shall hereafter become effective in accordance with the provisions of Section 8(a) of the Securities Act of 1933.

The information in this prospectus is not complete and may be changed. These securities may not be sold until the registration statement is effective. This prospectus is not an offer to sell these securities, and we are not soliciting offers to buy these securities, in any state or other jurisdiction where the offer or sale is not permitted.

SUBJECT TO COMPLETION, DATED October 30, 2025

PRELIMINARY PROSPECTUS



Up to 4,989,502 shares of Common Stock

This prospectus relates to the resale from time to time by the selling stockholders named in this prospectus or their permitted transferees (the “selling stockholders”) of up to 4,989,502 shares of our common stock, par value \$0.0001 (“common stock”), issuable upon the exercise of (i) warrants (the “Investor Warrants”) issued to a certain investor to purchase up to 4,000,000 shares of our common stock, (ii) pre-funded warrants (the “Pre-Funded Warrants”) issued to a certain investor to purchase up to 935,000 shares of our common stock, and (iii) warrants (the “Dominari Warrants”) and, together with the Investor Warrants, the “Warrants”) to purchase up to 54,502 shares of our common stock issued to Dominari Securities, LLC pursuant to a Confirmation Agreement, dated October 14, 2025, between us and Dominari Securities, LLC. Each Warrant has an exercise price per share of \$2.51, will be exercisable on the earlier of (A) the effective date of the stockholder approval for the issuance of shares of Common Stock issuable upon exercise of the Warrant (the “Stockholder Approval Date”) and (b) the date that is six months following the issuance date of the Warrants (the “Initial Exercise Date”) and will have a term until October 22, 2030. Each Pre-Funded Warrant has a purchase price of \$1.8999, an exercise price per share of \$0.0001 and is exercisable immediately and may be exercised at any time until such Pre-Funded Warrant is exercised in full. The shares of Common Stock issuable upon exercise of the Warrants and the Pre-Funded Warrants are collectively referred to as the “Warrant Shares.” The Investor Warrants and Pre-Funded Warrants were offered pursuant to a Securities Purchase Agreement (the “Purchase Agreement”), dated October 22, 2025, by and between us and the Hudson Bay Master Fund Ltd. (“Hudson Bay”). See “Summary; Purchase Agreement” for more information. We are registering the resale of the common stock as required by the registration rights included in the related Registration Rights Agreement, dated October 24, 2025, by and between us and Hudson Bay.

We will not receive any proceeds from the sale of the common stock by the selling stockholders pursuant to this prospectus.

The selling stockholders may offer, sell or distribute all or a portion of the securities hereby registered publicly or through private transactions at prevailing market prices or at negotiated prices. We are required to pay certain costs, expenses and fees in connection with the registration of these securities, including with regard to compliance with state securities or “blue sky” laws. The selling stockholders will bear all commissions and discounts, if any, attributable to their sale of shares of common stock. See the section titled “Plan of Distribution.”

You should carefully read this prospectus and the applicable prospectus supplement as well as the documents incorporated or deemed to be incorporated by reference in this prospectus before you purchase any of the securities offered hereby. You should also read the documents we refer to in the “Where You Can Find More Information” section of this prospectus for information on us and our financial statements.

Our common stock is listed on The Nasdaq Capital Market (the “Nasdaq”) under the symbol “MDAI.” On October 29, 2025, the last reported sale price of our common stock was \$2.18 per share as reported on the Nasdaq. We recommend that you obtain current market quotations for our common stock prior to making an investment decision. Our principal executive offices are located at 2515 McKinney Ave, Suite 1000, Dallas, TX. Our telephone number is (972) 499-4934. Our website is <https://investors.spectral-ai.com>. The information found on, or otherwise accessible through, our website is not incorporated into, and does not form a part of, this prospectus or any other report or document we file with or furnish to the SEC.

We are an “emerging growth company” and a “smaller reporting company” under applicable federal securities laws and will be subject to reduced reporting requirements. This prospectus complies with the requirements that apply to an issuer that is an emerging growth company.

You should carefully read this prospectus, any prospectus supplement relating to any specific offering of securities, and all information incorporated by reference herein and therein.

Investing in our securities involves a high degree of risk. These risks are discussed in this prospectus under “Risk Factors” beginning on page 5 and in the documents incorporated by reference in this prospectus.

Neither the Securities and Exchange Commission (the “SEC”) nor any state securities commission has approved or disapproved of these securities or passed upon the adequacy or accuracy of this prospectus. Any representation to the contrary is a criminal offense.

The date of this prospectus is _____, 2025

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ABOUT THIS PROSPECTUS

This prospectus is part of the registration statement that we filed with the Securities and Exchange Commission (the “SEC”) pursuant to which the selling stockholders named in this prospectus may, from time to time, offer and sell or otherwise dispose of the shares of our common stock covered by this prospectus. As permitted by the rules and regulations of the SEC, the registration statement filed by us includes additional information not contained in this prospectus.

To the extent required under applicable law in connection with a particular offering of such securities by the selling stockholders, we or the selling stockholders will provide a prospectus supplement to this prospectus that contains specific information about the securities being offered and sold and the specific terms of that offering. To the extent permitted under applicable law, we and the selling stockholders may also authorize one or more free writing prospectuses that may contain material information relating to these offerings. Any such prospectus supplement or free writing prospectus may also add, update or change information contained in this prospectus with respect to that offering. If there is any inconsistency between the information in this prospectus and the applicable prospectus supplement or free writing prospectus, you should rely on the prospectus supplement or free writing prospectus, as applicable.

Neither we nor the selling stockholders have authorized anyone to provide you with any information or to make any representations other than those contained in this prospectus, any applicable prospectus supplement or any applicable free writing prospectuses prepared by or on behalf of us or to which we have referred you. Neither we nor the selling stockholders take any responsibility for, nor provide any assurance as to the reliability of, any other information that others may give you. Neither we nor the selling stockholders will make an offer to sell these securities in any jurisdiction where the offer or sale is not permitted.

We further note that the representations, warranties and covenants made by us in any agreement that is filed as an exhibit to any document that is incorporated by reference in this prospectus were made solely for the benefit of the parties to such agreement, including, in some cases, for the purpose of allocating risk among the parties to such agreements, and should not be deemed to be a representation, warranty or covenant to you. Moreover, such representations, warranties or covenants were accurate only as of the date when made. Accordingly, such representations, warranties and covenants should not be relied on as accurately representing the current state of our affairs.

You should read the entire prospectus and any prospectus supplement and any related issuer free writing prospectus, as well as the documents incorporated by reference into this prospectus or any prospectus supplement or any related issuer free writing prospectus, together with the additional information described under “Where You Can Find More Information,” before making an investment decision. You should also carefully consider, among other things, the matters discussed in the section entitled “Risk Factors” herein. Neither the delivery of this prospectus or any prospectus supplement or any issuer free writing prospectus nor any sale made hereunder shall under any circumstances imply that the information contained or incorporated by reference herein or in any prospectus supplement or issuer free writing prospectus is correct as of any date subsequent to the date hereof or of such prospectus supplement or issuer free writing prospectus, as applicable. You should assume that the information appearing in this prospectus, any prospectus supplement or any document incorporated by reference is accurate only as of the date of the applicable documents, regardless of the time of delivery of this prospectus or any sale of securities. Our business, financial condition, results of operations and prospects may have changed since that date.

This prospectus and the information incorporated herein by reference include trademarks, service marks and trade names owned by us or other companies. All trademarks, service marks and trade names included or incorporated by reference into this prospectus, any applicable prospectus supplement or any related free writing prospectus are the property of their respective owners.

This prospectus contains forward-looking statements that are subject to a number of risks and uncertainties, many of which are beyond our control. See “Risk Factors” and “Cautionary Statement Regarding Forward Looking Statements” appearing in this prospectus and in the documents we file with the SEC that are incorporated by reference into this prospectus.

CAUTIONARY STATEMENT REGARDING FORWARD LOOKING STATEMENTS

This prospectus and the documents incorporated by reference herein contain forward-looking statements within the meaning of Section 27A of the Securities Act, and Section 21E of the Securities Exchange Act of 1934, as amended (the “Exchange Act”). Any statements about our expectations, beliefs, plans, objectives, assumptions or future events or performance are not historical facts and may be forward-looking. These statements are often, but are not always, made through the use of words or phrases such as “anticipate,” “believe,” “contemplate,” “continue,” “could,” “estimate,” “expect,” “intend,” “may,” “plan,” “potential,” “predict,” “project,” “seek,” “should,” “target,” “will,” “would,” and similar expressions, or the negative of these terms, or similar expressions. Accordingly, these statements involve estimates, assumptions and uncertainties which could cause actual results to differ materially from those expressed in them. Any forward-looking statements are qualified in their entirety by reference to the factors discussed throughout this prospectus, and in particular those factors referenced in the section entitled “Risk Factors.”

The forward-looking statements contained in this prospectus are based on our current expectations and beliefs concerning future developments and their potential effects on us. There can be no assurance that future developments affecting us will be those that we have anticipated. These forward-looking statements involve a number of risks, uncertainties (some of which are beyond our control) or other assumptions that may cause actual results or performance to be materially different from those expressed or implied by these forward-looking statements. These risks and uncertainties include, but are not limited to, the following risks, uncertainties and other factors:

- We have incurred significant losses since inception and may not be able to achieve significant revenues or profitability.
- We are devoting substantially all of our efforts towards research and development of our DeepView System.
- We depend on government funding, which if lost or reduced, could have a material adverse effect on our research and development activities and our ability to commercialize our DeepView® technology. Our largest contract is with the Biomedical Advanced Research and Development Authority (“BARDA”) and is the largest single source of revenue for us. Our BARDA contract is not guaranteed to be completed or extended.
- The regulatory review process is expensive, time-consuming, and uncertain and we may be unable to obtain clearance, approval, De Novo classification, or certification for our DeepView technology.
- We are highly dependent on our senior management, directors and key personnel, and our business could be harmed if we are unable to attract and retain personnel necessary for our success.
- We may experience significant delays in completing clinical trials, which could prevent or significantly delay our targeted product launch timeframe and impair our viability and business plan.
- New legislation and regulations and legislative and regulatory reforms may make it more difficult and costly for us to obtain regulatory clearance, approval, De Novo classification, or certification of our DeepView System, or to manufacture, market and distribute our device after clearance, approval, or classification is obtained.
- Disruptions at the FDA and foreign regulatory agencies caused by funding shortages or global health concerns could hinder their ability to hire and retain key leadership and other personnel, or otherwise prevent new products and services from being developed or commercialized in a timely manner, which could negatively impact our business.

- Modifications to our DeepView System may require new clearances, approvals, De Novo classifications, certifications, or new or amended certifications, and may require us to cease marketing or to recall the modified device until clearances, approvals, De Novo classifications, or the relevant certifications are obtained.
- Quality problems and product liability claims could lead to recalls or safety alerts, reputational harm, adverse verdicts or costly settlements, and could have a material adverse effect on our business, results of operations, financial condition, and cash flows.
- We must comply with anti-kickback, fraud and abuse, false claims, transparency, and other healthcare laws and regulations.
- If our manufacturers fail to comply with the regulatory quality system regulations or any applicable equivalent regulations, our proposed operations could be interrupted, and our operating results would suffer.
- Actual or perceived failure to comply with data protection, privacy and security laws, regulations, standards and other requirements could negatively affect our business, financial condition or results of operations.
- As the regulatory framework for AI technology evolves, our business, financial condition and results of operation may be adversely affected.
- If we are unable to establish sales, marketing and distribution capabilities either on our own or in collaboration with third parties, we may not be successful in commercializing our DeepView System, if approved.
- We may not be able to achieve or maintain satisfactory pricing and margins for our DeepView technology.
- We will depend upon third-party suppliers, including contract manufacturers and single and sole source suppliers, making us vulnerable to supply shortages and price fluctuations that could negatively affect our business, financial condition and results of operations.
- We may encounter difficulties in managing our growth, which could disrupt our operations.
- The use of artificial intelligence, including machine learning, in our analytics platforms may result in reputational harm or liability.
- Product liability suits, whether or not meritorious, could be brought against us due to an alleged defective product or for the misuse of our DeepView System. These suits could result in expensive and time-consuming litigation, payment of substantial damages, and an increase in our insurance rates.
- The success of our algorithms depends on our significant repository of proprietary data.

- Changes in patent law or its interpretation could diminish the value of patents in general, thereby impairing our ability to protect our existing and future products.
- Our patent rights and other intellectual property may be subject to priority, ownership or inventorship disputes, interferences, and similar proceedings and we may not be able to enforce our intellectual property rights throughout the world.
- Nasdaq may delist our securities from trading on its exchange, which could limit investors' ability to make transactions in our securities and subject us to additional trading restrictions.
- We will incur increased costs as a result of operating as a public company, and the Company's management will be required to devote substantial time to new compliance and investor relations initiatives.
- The price of our common stock may be volatile.
- Changes in laws, regulations or rules, or a failure to comply with any laws, regulations or rules, may adversely affect our business, investments and results of operations.
- If we fail to maintain proper and effective internal controls over financial reporting, our ability to produce accurate and timely financial statements could be impaired, investors may lose confidence in our financial reporting and the trading price of our common stock may decline.
- Certain existing stockholders purchased, or may purchase, securities in the Company at a price below the current trading price of such securities and may experience a positive rate of return based on the current trading price. Future investors in the Company may not experience a similar rate of return.
- Warrants may become exercisable for common stock, which would increase the number of shares eligible for resale in the public market and result in dilution to our stockholders.

We have included important factors in the cautionary statements included in this prospectus and the documents we incorporate by reference herein and therein, particularly in the "Risk Factors" section of our Annual Report on Form 10-K for the fiscal year ended December 31, 2024 (the "Annual Report on Form 10-K"), that we believe could cause actual results or events to differ materially from the forward-looking statements that we make. Our forward-looking statements do not reflect the potential impact of any future acquisitions, mergers, dispositions, joint ventures or investments we may make. No forward-looking statement is a guarantee of future performance.

You should read this prospectus, any related prospectus supplement and any related free-writing prospectus, and the documents incorporated by reference herein and therein completely and with the understanding that our actual future results, levels of activity, performance and events and circumstances may be materially different from what we expect. The forward-looking statements contained or incorporated by reference in this prospectus or any prospectus supplement herein and therein represent our views as of the date of this prospectus are expressly qualified in their entirety by this cautionary statement. We anticipate that subsequent events and developments will cause our views to change. However, while we may elect to update these forward-looking statements at some point in the future, we have no current intention of doing so except to the extent required by applicable law. You should, therefore, not rely on these forward-looking statements as representing our views as of any date subsequent to the date of this prospectus.

MARKET AND INDUSTRY DATA

This prospectus incorporates by reference, and any prospectus supplement or free writing prospectus may contain and incorporate by reference, market data and industry statistics and forecasts that are based on independent industry publications and other publicly available information. Although we believe these sources are reliable, neither we nor the selling stockholders guarantee the accuracy or completeness of this information and neither we nor the selling stockholders have independently verified this information. In addition, the market and industry data and forecasts that may be included or incorporated by reference in this prospectus, any prospectus supplement or any applicable free writing prospectus may involve estimates, assumptions and other risks and uncertainties and are subject to change based on various factors, including those discussed under the heading “Risk Factors” contained in this prospectus, any applicable prospectus supplement and any applicable free writing prospectus, and under similar headings in other documents that are incorporated by reference into this prospectus. Accordingly, investors should not place undue reliance on this information.

PROSPECTUS SUMMARY

Unless the context otherwise requires, references to the “Company,” “Spectral,” “we,” “us,” “our” and similar terms refer to Spectral AI, Inc. and its subsidiaries.

Overview

Spectral AI, Inc., a Delaware corporation (the “Company”) is an Artificial Intelligence (“AI”) company focused on predictive medical diagnostics. Our DeepView® System uses proprietary AI algorithms to distinguish between fully damaged, partially damaged and healthy human tissue characteristics invisible to the naked eye, at the initial time point of wound presentation. The DeepView System delivers a binary prediction on the wound’s capacity to heal or not-heal by a specified time point in the future. Our DeepView System’s output is specifically engineered to assist the physician in making a more accurate, timely and informed decision regarding the treatment of the patient’s wounds. Our focus is on our burn indication.

In February 2024, our DeepView System, comprised of the multispectral imaging (“MSI”) component integrated with the predictive AI-Burn® software component, received United Kingdom Conformity Assessed (“UKCA”) marking for use in the United Kingdom for burn indications. In June 2025, we filed a De Novo application for the DeepView System with the United States Food and Drug Administration (“FDA”) so that it may achieve Class II medical device designation. Following our anticipated receipt of additional necessary market authorization, our business will have two primary revenue streams, a SaaS (software as a service) offering aligned with SaMD (software as a medical device) regulatory framework, and the imaging device component. The SaaS component will feature a software licensing fee that includes maintenance, image hosting, and access to algorithmic updates. The proprietary imaging device acquires the images for the AI algorithms and is a universal platform to house multiple clinical indications including burn wound healing analysis and other tissue indication assessments. Pricing for these components will be evaluated and strategically set per country and site-of-service for heightened customer adoption.

The DeepView System is comprised of the DeepView-AI Burns® software and the DeepView SnapShot® imaging device, and it is intended to be used as an adjunctive tool to aid health care providers in the assessment of burn wound healing potential by differentiating non-healing from healing tissue within an image. The MSI imaging technology within the DeepView SnapShot imaging device consists of patented proprietary multi-spectral optics and sensors, capturing injured tissue images ranging from near ultraviolet light, through the human visible wavelengths, and into the near infrared range. The broad wavelength ranges go beyond what the human eyes can see and capture what medical professionals cannot observe with their naked eyes. This wide range of wavelength images contains wound tissue physiology and captures the viability of various biomarkers within the skin and from the injured tissue spectral signatures. The imaging technology extracts appropriate clinical data and processes the image data to provide the injured tissue spectral signatures to the DeepView AI Burns software AI model and algorithms. The AI algorithm classifies various severities of the injuries as (i) fully damaged (non-healing), (ii) partially damaged or (iii) healthy tissue (healing) and displays a comparison of the original image next to an image with a color overlay of the non-healing portions of the wound. The image acquisition takes 0.2 seconds, and all image processing and AI model classification takes approximately 20 to 25 seconds. Our DeepView System’s proprietary optics can extract millions of pixels of data or AI model features from each group of raw images. This information is then used to advance algorithm optimization, which is trained and tested against a proprietary and clinically validated database of over 340 billion pixels of image data.

The Company has not generated any product revenue to date. The Company currently generates revenue from contract development and research services by providing such services to governmental agencies, primarily to the Biomedical Advanced Research and Development Authority (“BARDA”) and under a contract with the Medical Technology Enterprise Consortium (“MTEC”).

We have received substantial support from the U.S. government for our DeepView System's application for burn wounds from BARDA, which is part of the Department of Health and Human Services Office of the Assistant Secretary for Preparedness and Response in the United States, established to aid in securing the United States from chemical, biological, radiological, and nuclear threats, as well as from pandemic influenza and emerging infectious diseases. We have also received funding from the National Science Foundation, the National Institute of Health and the Defense Health Agency ("DHA"), an agency within the Department of Defense. On September 27, 2023, the Company executed a new contract with BARDA, providing the Company with additional funding of up to approximately \$150.0 million. This includes an initial award of approximately \$54.9 million to support the clinical validation study and the distribution of up to 30 DeepView Systems in various emergency rooms and burn centers to support the study. The funding also supported the Company's FDA De Novo submission of our DeepView AI – Burn software, which was completed on June 30, 2025. The contract also includes options, similar to our prior BARDA contracts, with an additional total value of approximately \$95.1 million which can be exercised for additional product development, procurement and the expanded deployment of DeepView Systems at emergency rooms, trauma and burn centers. These deployments will enable the Company to conduct health economic and outcome research studies to support the broader clinical adoption of the DeepView System.

Subject to our receipt of the necessary regulatory market authorizations, we intend to initially sell the DeepView System throughout the United States and the UK for its burn indication. Given our receipt of the UKCA authorization for our burn indication, we anticipate initial sales in UK to begin in 2026. The sales channel for our burn indication will be supported by existing and future governmental contracts, primarily from agencies such as BARDA and the DHA. In the United States, there are approximately 100 burn centers, 700 trauma centers and 5,400 federal and community hospitals with emergency rooms where the burn patients are most likely to present upon injury. The DeepView System provides a quick clinical diagnostic tool for emergency room clinicians. It can be used to quickly assess the healing potential for burn wounds so decisions regarding whether patients need routine care or should be transferred to trauma centers or burn centers for advanced care and accurate surgical planning can be made in a much more timely fashion. The DeepView System provides an advanced diagnostic assessment of the non-healing areas of a burn in emergency rooms, trauma centers and burn centers. For the DeepView System's burn application and following receipt of any future contract awards, we plan to partner with the U.S. governmental agency sponsors to implement the distribution of our DeepView System throughout the United States into key regions to support the United States' mass casualty countermeasure directives, with the goal of making our country better prepared for mass casualty events and saving scarce healthcare resources.

Purchase Agreement

On October 22, 2025, we entered into a securities purchase agreement with Hudson Bay for the sale of an aggregate of 3,065,000 shares (the "Shares") of common stock, at an offering price of \$1.90 per Share (the "Securities Purchase Agreement"). The sale and issuance of the Shares was made pursuant to the Company's registration statement on Form S-3 (file number 333-282681) (the "Registration Statement"), filed with the SEC on October 16, 2024 and declared effective on October 31, 2024, and the Company's prospectus supplement relating to the Offering, which was filed with the SEC on October 23, 2025, that forms part of the Registration Statement.

Additionally, in a concurrent private placement pursuant to the Securities Purchase Agreement (the "Private Placement"), the Company agreed to sell to Hudson Bay an aggregate of (i) Warrants to purchase 4,000,000 shares of Common Stock at an exercise price of \$2.51 per share, and (ii) Pre-Funded Warrants to purchase 935,000 shares of Common Stock at an exercise price of \$0.0001 per share. The Warrants and the Pre-Funded Warrants, along with the shares of Common Stock issuable upon the exercise of the Warrants or Pre-Funded Warrants, as applicable, were offered pursuant to the exemptions provided in Section 4(a)(2) under the Securities Act of 1933, as amended (the "Securities Act").

The Securities Purchase Agreement contained customary representations, warranties and agreements by the Company and Hudson Bay and customary conditions to closing. Additionally, in connection with this offering and the Private Placement, on October 24, 2025, we entered into a registration rights agreement with Hudson Bay that granted certain registration rights.

The Warrants issued in connection with the Securities Purchase Agreement will be exercisable on the earlier of (A) the Stockholder Approval Date and (b) the date that is six months following the issuance date of the Warrants and expiring on October 22, 2030. Each Pre-Funded Warrant has a purchase price of \$1.8999, an exercise price per share of \$0.0001 and is exercisable immediately and may be exercised at any time until such Pre-Funded Warrant is exercised in full. Additionally, the Warrants and Pre-Funded Warrants issued in connection with the Securities Purchase Agreement contain adjustment provisions, subject to certain exceptions and limitations, in the event of (i) stock dividends and split, (ii) reclassifications of securities, (iii) issuance of common stock or Common Stock Equivalents (as defined in the Securities Purchase Agreement), (iv) pro rata distributions, (v) Fundamental Transactions (as defined in the Warrants), and (vi) subsequent equity sales of shares of common stock or common stock equivalents for a consideration per share less than a price equal to \$2.51.

Confirmation Agreement

On October 14, 2025, the Company entered into a Confirmation Agreement with Dominari Securities, LLC (“Dominari”), pursuant to which Dominari agreed to waive their right of participation in the Private Placement in exchange for being issued a Warrant to purchase 54,502 shares of common stock which was calculated as the product of (i) six percent (6.00%) multiplied by (ii) thirty percent (30.00%) of the amount raised in the transaction, divided by the exercise price as set forth in the Warrant. The Warrant included an exercise price of \$2.51 and terms consistent with the terms offered to the other selling stockholders.

Corporate Information

On September 12, 2023, following completion of the Company’s business combination with Rosecliff Acquisition Corp I, the Company began trading its shares of the Company Common Stock and the Public Warrants on the Nasdaq Global Market (the “Nasdaq”) under the symbols “MDAI” and “MDAIW”, respectively.

Our principal executive offices are located at 2515 McKinney Ave, Suite 1000, Dallas, TX. Our telephone number is (972) 499-4934. Our website is <https://investors.spectral-ai.com>. The information found on, or otherwise accessible through, our website is not incorporated into, and does not form a part of, this prospectus or any other report or document we file with or furnish to the SEC. We have included our website address in this prospectus solely as an inactive textual reference.

Implications of Being an Emerging Growth Company and Smaller Reporting Company

We are an emerging growth company, as defined in the JOBS Act. The JOBS Act provides that an emerging growth company can take advantage of an extended transition period for complying with new or revised accounting standards. This provision allows an emerging growth company to delay the adoption of some accounting standards until those standards would otherwise apply to private companies. We have elected to use the extended transition period under the JOBS Act for the adoption of certain accounting standards until the earlier of the date we (i) are no longer an emerging growth company or (ii) affirmatively and irrevocably opt out of the extended transition period provided in the JOBS Act. As a result, our financial statements may not be comparable to companies that comply more promptly with new or revised accounting pronouncements as of public company effective dates.

In addition, as an emerging growth company, we may take advantage of specified reduced disclosure and other requirements that are otherwise applicable generally to public companies. These provisions include:

- being permitted to present only two years of audited consolidated financial statements in addition to any required unaudited interim consolidated financial statements, with correspondingly reduced disclosure in the section titled “Management’s Discussion and Analysis of Financial Condition and Results of Operations” in this prospectus;
- an exception from compliance with the auditor attestation requirements of Section 404 of the Sarbanes-Oxley Act of 2002, as amended;
- reduced disclosure about our executive compensation arrangements in our periodic reports, proxy statements and registration statements;
- exemptions from the requirements of holding non-binding advisory votes on executive compensation or golden parachute arrangements; and

We may take advantage of these provisions until the last day of the fiscal year ending after the fifth anniversary of the Company’s initial public offering or such earlier time that we no longer qualify as an emerging growth company. We will cease to qualify as an emerging growth company on the date that is the earliest of: (i) December 31, 2026; (ii) the last day of the fiscal year in which we have more than \$1.235 billion in total annual gross revenues; (iii) the date on which we are deemed to be a “large accelerated filer” under the rules of the SEC, which means the market value of our common stock that is held by non-affiliates exceeds \$700.0 million as of the prior June 30th and we have been a public company for at least 12 months and have filed one annual report on Form 10-K; or (iv) the date on which we have issued more than \$1.0 billion of non-convertible debt over the prior three-year period. We may choose to take advantage of some but not all of these reduced reporting burdens. Accordingly, the information contained herein may be different than you might obtain from other public companies in which you hold equity interests.

We are also a “smaller reporting company.” If we are a smaller reporting company at the time we cease to be an emerging growth company, we may continue to rely on exemptions from certain disclosure requirements that are available to smaller reporting companies. Specifically, as a smaller reporting company, we may choose to present only the two most recent fiscal years of audited consolidated financial statements in our Annual Report on Form 10-K and, similar to emerging growth companies, smaller reporting companies have reduced disclosure obligations regarding executive compensation.

THE OFFERING

Shares of common stock offered by the selling stockholders	4,054,502 shares of common stock issuable upon exercise of the Warrants and 935,000 shares of common stock issuable upon exercise of the Pre-Funded Warrants.
Shares of common stock outstanding prior to the exercise of the Warrants and Pre-Funded Warrants	30,688,895 shares of common stock
Use of proceeds	We will not receive any proceeds from the sale of shares of common stock by the selling stockholders pursuant to this prospectus.
Dividend Policy	We have never declared or paid cash dividends on our common stock and do not anticipate paying any cash dividends in the foreseeable future but intend to retain our capital resources for reinvestment in our business.
Trading Market and Ticker Symbol for our common stock	“MDAI”
Risk Factors	Investing in our securities involves a high degree of risk. See “Risk Factors” beginning on page 5 of this prospectus and the section entitled “Risk Factors” in our Annual Report on Form 10-K and in any similar section contained in the applicable prospectus supplement and in any free writing prospectuses we have authorized for use in connection with a specific offering and under similar headings in the documents that are incorporated by reference into this prospectus.

The number of shares of common stock outstanding prior to the exercise of the Warrants and Pre-Funded Warrants as of October 28, 2025 excludes the following:

- 3,867,901 shares of our common stock issuable upon the exercise of outstanding stock options at a weighted average exercise price of \$1.83 per share;
- 13,994,683 shares of common stock issuable upon exercise of outstanding warrants with a weighted average exercise price of \$2.60 per share;
- 59,700 shares of our common stock issuable upon vesting of restricted stock units issued under our equity incentive plan; and
- 935,000 shares of common stock, issuable upon exercise of the Pre-Funded Warrants.

Unless otherwise indicated, this prospectus supplement reflects and assumes no exercise of outstanding options or warrants.

RISK FACTORS

Investing in our securities involves a high degree of risk. In addition to the other information contained in this prospectus and in the documents we incorporate by reference, you should carefully consider the specific factors discussed under the heading “Risk Factors” in the applicable prospectus supplement, together with all of the other information contained or incorporated by reference in the prospectus supplement or appearing or incorporated by reference in this prospectus. You should also consider the risks, uncertainties and assumptions discussed under Item 1A, “Risk Factors,” in our Annual Report on Form 10-K or any updates in our Quarterly Reports on Form 10-Q, together with all other information appearing in or incorporated by reference into this prospectus or the applicable prospectus supplement, before deciding whether to purchase any securities being offered. The risks and uncertainties discussed in the foregoing are not the only ones facing us. Additional risks and uncertainties not presently known to us, or that we currently see as immaterial, may also harm our business. Past financial performance may not be a reliable indicator of future performance, and historical trends should not be used to anticipate results or trends in future periods. If any of these risks occur, our business, business prospects, financial condition or results of operations could be seriously harmed. This could cause the trading price of our common stock to decline, resulting in a loss of all or part of your investment. Please also read carefully the section above entitled “Cautionary Statement Regarding Forward-Looking Statements.”

USE OF PROCEEDS

All of the shares of common stock offered by the selling stockholders pursuant to this prospectus will be sold by the selling stockholders for their respective accounts. We will not receive any of the proceeds from these sales.

The selling stockholders will pay any underwriting fees, discounts, selling commissions, stock transfer taxes and certain legal expenses incurred by such selling stockholders in disposing of their shares of common stock and we will bear all other costs, fees and expenses incurred in effecting the registration of such securities covered by this prospectus, including, without limitation, all registration and filing fees, Nasdaq listing fees and fees and expenses of our counsel and our independent registered public accountants.

DESCRIPTION OF SECURITIES

The following description sets forth certain material terms and provisions of our securities that we may offer under this prospectus but is not complete. This description also summarizes relevant provisions of Delaware General Corporation Law (the “DGCL”). The following summary does not purport to be complete and is subject to, and is qualified in its entirety by reference to, the applicable provisions of the DGCL, our Charter and our Bylaws, copies of which are incorporated by reference as an exhibit to our Annual Report on Form 10-K. In addition, you should be aware that the summary below does not give full effect to the terms of the provisions of statutory or common law, and we encourage you to read our Charter, our Bylaws, and the applicable provisions of Delaware law for additional information.

The Charter authorizes the issuance of 81,000,000 shares of capital stock of the Company, consisting of (i) 80,000,000 shares of common stock, and (ii) 1,000,000 shares of preferred stock, par value \$0.0001 per share (the “preferred stock”). As of October 28, 2025, there were 30,688,895 shares of our common stock issued and outstanding and no shares of preferred stock issued and outstanding. The authorized and unissued shares of common stock and the authorized and undesignated shares of preferred stock are available for issuance without further action by our stockholders, unless such action is required by applicable law or the rules of any stock exchange on which our securities may be listed. Unless approval of our stockholders is so required, under Nasdaq rule 5635 or otherwise, our board of directors does not intend to seek stockholder approval for the issuance and sale of our common stock or preferred stock.

Common Stock

Holders of our common stock are entitled to one vote for each share held on all matters submitted to a vote of stockholders and have no cumulative voting rights. Holders of our common stock are entitled to receive ratably dividends as may be declared by our board of directors out of funds legally available for that purpose, subject to any preferential dividend or other rights of any then outstanding preferred stock. We have never paid cash dividends on our common stock and do not anticipate paying any cash dividends in the foreseeable future but intend to retain our capital resources for reinvestment in our business. Any future disposition of dividends will be at the discretion of our board of directors and will depend upon, among other things, our future earnings, operating and financial condition, capital requirements, and other factors.

Holders of our common stock do not have preemptive or conversion rights or other subscription rights. On the liquidation, dissolution, distribution of assets or winding up of the Company, each holder of common stock will be entitled, pro rata on a per share basis, to all assets of the Company of whatever kind available for distribution to the holders of common stock, subject to the designations, preferences, limitations, restrictions and relative rights of any preferred stock then outstanding. The rights, preferences and privileges of holders of common stock are subject to and may be adversely affected by the rights of the holders of shares of any series of our preferred stock that we may designate and issue in the future.

Holders of common stock are entitled to cast one vote per share of common stock on all matters to be voted on by stockholders. Holders of common stock will vote together as a single class, and an action will be approved by stockholders if the number of votes cast in favor of the action exceeds the number of votes cast in opposition to the action, while directors will be elected by a plurality of the votes cast. Holders of common stock are not entitled to cumulate their votes in the election of directors. When a quorum is present at any meeting, any matter other than the election of directors to be voted upon by the stockholders at such meeting will be decided by a majority vote of the holders of shares of capital stock present or represented at the meeting and voting affirmatively or negatively on such matter. At all meetings of stockholders for the election of directors at which a quorum is present, a plurality of the votes cast will be sufficient to elect such directors.

Warrants

We may issue Warrants to purchase our securities or other rights, including rights to receive payment in cash or securities based on the value, rate or price of one or more specified commodities, currencies, securities or indices, or any combination of the foregoing. Warrants may be issued independently or together with any other securities that may be sold by us pursuant to this prospectus or any combination of the foregoing and may be attached to, or separate from, such securities. To the extent Warrants that we issue are to be publicly-traded, each series of such Warrants will be issued under a separate warrant agreement to be entered into between us and a warrant agent.

We will file as exhibits to the registration statement of which this prospectus is a part, or will incorporate by reference from a current report on Form 8-K that we file with the Commission, forms of the Warrant and warrant agreement, if any. The prospectus supplement relating to any Warrants that we may offer will contain the specific terms of the warrants and a description of the material provisions of the applicable warrant agreement, if any. These terms may include the following:

- the title of the Warrants;
- the aggregate number of Warrants;
- the price or prices at which the Warrants will be offered;
- the designation, amount and terms of the securities or other rights for which the Warrants are exercisable;
- the designation and terms of the other securities, if any, with which the Warrants are to be issued and the number of Warrants issued with each other security;
- if applicable, the date on and after which the Warrants and the related securities will be separately transferable;
- the price or prices at which the securities or other rights purchasable upon exercise of the Warrants may be purchased;
- any provisions for adjustment of the number or amount of securities receivable upon exercise of the Warrants or the exercise price of the Warrants;
- the manner of exercise of the Warrants, including any cashless exercise rights;
- the terms of any rights of us to redeem or call the Warrants;
- the identities of any warrant agent and any calculation or other agent for the Warrants;
- a discussion of any material U.S. federal income tax considerations applicable to the exercise of the Warrants;
- the date on which the right to exercise the Warrants will commence, and the date on which the right will expire;
- If any, the maximum or minimum number of Warrants that may be exercised at any time;
- information with respect to book-entry procedures, if any; and
- any other terms of the Warrants, including terms, procedures and limitations relating to the exchange and exercise of the Warrants.

Exercise of Warrants. Each Warrant will entitle the holder of Warrants to purchase the amount of securities or other rights, at the exercise price stated or determinable in the Warrants. Warrants may be exercised at any time up to the close of business on the expiration date shown in the applicable prospectus supplement, unless otherwise specified in such prospectus supplement. After the close of business on the expiration date, if applicable, unexercised Warrants will become void. Warrants may be exercised in the manner described in the applicable prospectus supplement. When the Warrant holder makes the payment and properly completes and signs the warrant certificate at the corporate trust office of the warrant agent, if any, or any other office indicated in the prospectus supplement, we will, as soon as possible, forward the securities or other rights that the warrant holder has purchased. If the warrant holder exercises less than all of the Warrants represented by the warrant certificate, we will issue a new warrant certificate for the remaining Warrants.

Enforceability of Rights By Holders of Warrants. Any warrant agent will act solely as our agent under the applicable warrant agreement and will not assume any obligation or relationship of agency or trust with any holder of any Warrant. A single bank or trust company may act as warrant agent for more than one issue of Warrants. A warrant agent will have no duty or responsibility in case of any default by us under the applicable warrant agreement or Warrant, including any duty or responsibility to initiate any proceedings at law or otherwise, or to make any demand upon us. Any holder of a Warrant may, without the consent of the related warrant agent or the holder of any other Warrant, enforce by appropriate legal action the holder's right to exercise, and receive the securities purchasable upon exercise of, its Warrants in accordance with their terms.

Warrant Agreement Will Not Be Qualified Under Trust Indenture Act. No warrant agreement will be qualified as an indenture, and no warrant agent will be required to qualify as a trustee, under the Trust Indenture Act. Therefore, holders of Warrants issued under a warrant agreement will not have the protection of the Trust Indenture Act with respect to their Warrants.

Outstanding Warrants

As of October 28, 2025, including the Warrants, we had outstanding warrants to purchase 11,344,229 shares of common stock with a weighted average exercise price of \$2.60 per share, all of which are currently exercisable.

Anti-Takeover Effects of Certain Provisions of the DGCL, our Charter and Bylaws

Section 203 of the DGCL affords us certain protections, such as prohibiting us from engaging in any business combination with any stockholder for a period of three years following the time that such stockholder (the "interested stockholder") came to own at least 15% of our outstanding voting stock (the "acquisition"), except if:

- our board of directors approved the acquisition prior to its consummation;
- the interested stockholder owned at least 85% of the outstanding voting stock upon consummation of the acquisition; or
- the business combination is approved by our board of directors, and by a two-thirds vote of the other stockholders in a meeting.

Generally, a "business combination" includes any merger, consolidation, asset or stock sale, or certain other transactions resulting in a financial benefit to the interested stockholder. Subject to certain exceptions, an "interested stockholder" is a person who, together with that person's affiliates and associates, owns, or within the previous three years owned, 15% or more of our voting stock.

Under certain circumstances, these anti-takeover provisions will make it more difficult for a person who would be an "interested stockholder" to effect various business combinations with us for a three-year period. This may encourage companies interested in acquiring us to negotiate in advance with our board of directors because the stockholder approval requirement would be avoided if our board of directors approves the acquisition that results in the stockholder becoming an interested stockholder.

This may also have the effect of preventing changes in our board of directors and may make it more difficult to accomplish transactions that stockholders may otherwise deem to be in their best interests.

Exclusive Forum

The Charter provides that, unless the Company consents in writing to the selection of an alternative forum, the Court of Chancery of the State of Delaware (the “Chancery Court”) shall be the sole and exclusive forum for any stockholder (including a beneficial owner) to bring: (i) any derivative action or proceeding brought on the Company’s behalf; (ii) any action, suit or proceeding asserting a claim of breach of fiduciary duty owed by any current or former director, officer or other employee, agent or stockholder of the Company to the Company or its stockholders; (iii) any action, suit or proceeding asserting a claim against the Company, its current or former directors, officers, or employees, agents or stockholders arising pursuant to any provision of the DGCL, the Charter or the Bylaws or (iv) any action, suit or proceeding asserting a claim against the Company, its current or former directors, officers, or employees, agents or stockholders governed by the internal affairs doctrine, and, if such action is filed in a court other than the Chancery Court (a “Foreign Action”) by any stockholder (including any beneficial owner), to the fullest extent permitted by law, such stockholder shall be deemed to have consented to (a) the personal jurisdiction of the Chancery Court in connection with any action brought in any such court; and (b) having service of process made upon such stockholder in any such action by service upon such stockholder’s counsel in the Foreign Action as agent for such stockholder.

The exclusive forum provision set forth above does not apply to, and does not preclude or contract the scope of, either (i) exclusive federal jurisdiction pursuant to Section 27 of the Securities and Exchange Act for claims seeking to enforce any liability or duty created by the Securities and Exchange Act or the rules and regulations thereunder, or any other claim for which the U.S. federal courts have exclusive jurisdiction, or (ii) concurrent jurisdiction under Section 22 of the Securities Act for federal and state courts over all claims seeking to enforce any liability or duty created by the Securities Act or the rules and regulations thereunder.

Potential Effects of Authorized but Unissued Stock

The Charter provides that certain shares of authorized but unissued common stock and preferred stock will be available for future issuances without stockholder approval and could be utilized for a variety of corporate purposes, including future public offerings, to raise additional capital, or to facilitate acquisitions. The existence of authorized but unissued and unreserved common stock and preferred stock could make more difficult or discourage an attempt to obtain control of the Company by means of a proxy contest, tender offer, merger, or otherwise.

Limitations of Director Liability and Indemnification of Directors, Officers and Employees

The DGCL authorizes corporations to limit or eliminate the personal liability of directors or officers of corporations and their stockholders for monetary damages for breaches of directors’ or officers’ fiduciary duties, subject to certain exceptions. The Charter includes a provision that eliminates the personal liability of directors or officers for monetary damages for any breach of fiduciary duty as a director or officer except to the extent such exemption from liability or limitation thereof is not permitted under the DGCL as the same exists or may hereafter be amended.

The Bylaws provide that the Company must indemnify and hold harmless the directors and officers of the Company to the fullest extent authorized by the DGCL. The Company may purchase and maintain insurance on behalf of any person who is or was a director, officer, employee or agent of the Company, or is or was serving at the request of the Company as a director, officer, employee or agent of another corporation, partnership, joint venture, trust enterprise or non-profit entity against any liability asserted against him or her and incurred by him or her in any such capacity, or arising out of his or her status as such, whether or not the Company would have the power to indemnify him or her against such liability under the provisions of the DGCL.

The limitation of liability, advancement and indemnification provisions in the Charter and Bylaws may discourage stockholders from bringing lawsuits against directors or officers for breach of their fiduciary duties. These provisions also may have the effect of reducing the likelihood of derivative litigation against directors and officers, even though such an action, if successful, might otherwise benefit the Company and its stockholders. In addition, your investment may be adversely affected to the extent the Company pays the costs of settlement and damage awards against directors and officers pursuant to these indemnification provisions. See below for a further explanation of our director and officer limitations on liability and indemnification.

Listing

Our common stock is listed on Nasdaq under the symbol “MDAI” and our publicly traded warrants are listed under the symbol “MDAIW”.

Transfer Agent and Registrar

The Transfer Agent and Registrar for our common stock and warrants is Continental Stock Transfer & Trust Company.

SELLING STOCKHOLDERS

This prospectus relates to the resale by the selling stockholders, from time to time, of an aggregate of up to 4,989,502 shares of our common stock issuable upon exercise of the Warrants and Pre-Funded Warrants, as described under “Prospectus Summary; Purchase Agreement.” The selling stockholders may from time to time offer and sell any or all of the shares of common stock set forth below pursuant to this prospectus and any accompanying prospectus supplement. When we refer to the “selling stockholders” in this prospectus, we mean the persons listed in the table below, and the donees, pledgees, transferees, assignees, designees, distributees or other successors-in-interest who later come to hold any of the selling stockholders’ interest in the common stock other than through a public sale.

The following table sets forth, as of the date of this prospectus, the names of the selling stockholders, certain beneficial ownership information with respect to the selling stockholders, and the aggregate number of shares of common stock that the selling stockholders may offer pursuant to this prospectus. This table was prepared based on information provided to us by the selling stockholders, and it is possible that certain of such selling stockholders may have sold, transferred or otherwise disposed of some or all of the securities shown below subsequent to the date as of which they provided such information.

Beneficial ownership is determined according to the rules of the SEC, which generally provide that a person has beneficial ownership of a security if such person possesses sole or shared voting or investment power over that security. Under those rules, beneficial ownership includes securities that the individual or entity has the right to acquire, such as through the conversion of convertible notes, within sixty (60) days following a specified date. The inclusion of any shares of common stock in this table does not constitute an admission of beneficial ownership for any selling stockholders named below.

The number of shares of common stock and percentages of beneficial ownership set forth below are based on 30,688,895 shares of common stock issued and outstanding as of October 28, 2025.

Name of Selling Stockholder	Shares Beneficially Owned Prior to the Offering		Shares Being Offered	Shares Beneficially Owned After the Offering	
	Shares	%		Shares	%
Hudson Bay Master Fund Ltd. ⁽¹⁾	3,081,709	9.9%	4,935,000	2,953,114	8.3%
Dominari Securities, LLC ⁽²⁾	54,502	0%	54,502	0	0%
Total Shares	3,136,211		4,989,502	2,953,114	

(1) Consists of (i) 2,953,114 shares of common stock, (ii) 4,000,000 shares of common stock issuable upon exercise of the Investor Warrants, and (iii) 935,000 shares of common stock issuable upon exercise of the Pre-Funded Warrants. Hudson Bay Master Fund Ltd. is a Cayman Islands Exempted Company with an address at c/o Hudson Bay Capital Management LP, 290 Harbor Dr., Stamford, CT 06902. Hudson Bay Capital Management LP, the investment manager of Hudson Bay Master Fund Ltd., has voting and investment power over these securities. Sander Gerber is the managing member of Hudson Bay Capital GP LLC, which is the general partner of Hudson Bay Capital Management LP. Each of Hudson Bay Master Fund Ltd. and Sander Gerber disclaims beneficial ownership over these securities. The Investor Warrants and the Pre-Funded Warrants held by Hudson Bay Master Fund Ltd. to acquire up to 4,935,000 shares of common stock in the aggregate may not be exercised to the extent that Hudson Bay Master Fund Ltd. and its affiliated entities would beneficially own more than 4.99% (in the case of the Investor Warrants) or 9.99% (in the case of the Pre-Funded Warrants) of our shares of common stock outstanding immediately after giving effect to such exercise. The figures presented above under the heading “Shares Beneficially Owned Prior to the Offering” give effect to such beneficial ownership limitations.

(2) Consists of 54,502 shares of common stock issuable upon exercise of the Dominari Warrants, with all such securities held of record by Dominari Securities, LLC. Dominari Securities, LLC is a Delaware limited liability company with an address at 725 5th Avenue, 23rd Floor, New York, NY 10022. Soo Yu, the Chief Operating Officer of Dominari, exercises voting and dispositive power over the securities held by Dominari Securities, LLC.

We cannot advise you as to whether the selling stockholders will in fact sell any or all of the shares of common stock covered by this prospectus.

Selling stockholder information for each additional selling stockholder, if any, will be set forth by prospectus supplement to the extent required prior to the time of any offer or sale of such selling stockholder’s shares pursuant to this prospectus. To the extent permitted by law, a prospectus supplement may add, update, substitute, or change the information contained in this prospectus, including the identity of each selling stockholders and the number of shares of common stock registered on its behalf. A selling stockholder may sell or otherwise transfer all, some or none of such shares of common stock in this offering. See “Plan of Distribution.”

Other than as described above or elsewhere in this prospectus or the documents incorporated by reference herein, none of the selling stockholders have any material relationship with us or any of our predecessors or affiliates.

PLAN OF DISTRIBUTION

The selling stockholders, which as used herein includes donees, pledgees, transferees or other successors-in-interest selling shares of common stock or interests in shares of common stock received after the date of this prospectus from a selling stockholder as a gift, pledge, partnership distribution or other transfer, may, from time to time, sell, transfer or otherwise dispose of any or all of their shares of common stock or interests in shares of common stock on any stock exchange, market or trading facility on which the shares are traded or in private transactions. These dispositions may be at fixed prices, at prevailing market prices at the time of sale, at prices related to the prevailing market price, at varying prices determined at the time of sale, or at negotiated prices.

The selling stockholders may use any one or more of the following methods when disposing of shares or interests therein:

- ordinary brokerage transactions and transactions in which the broker-dealer solicits purchasers;
- block trades in which the broker-dealer will attempt to sell the shares as agent, but may position and resell a portion of the block as principal to facilitate the transaction;
- purchases by a broker-dealer as principal and resale by the broker-dealer for its account;
- an exchange distribution in accordance with the rules of the applicable exchange;
- privately negotiated transactions;
- short sales and settlement of short sales entered into after the effective date of the registration statement of which this prospectus is a part;
- through the writing or settlement of options or other hedging transactions, whether through an options exchange or otherwise;
- broker-dealers may agree with the selling stockholders to sell a specified number of such shares at a stipulated price per share;
- a combination of any such methods of sale; and
- any other method permitted by applicable law.

The selling stockholders may, from time to time, pledge or grant a security interest in some or all of the shares of common stock owned by them and, if they default in the performance of their secured obligations, the pledgees or secured parties may offer and sell the shares of common stock, from time to time, under this prospectus, or under an amendment to this prospectus under Rule 424(b)(3) or other applicable provision of the Securities Act, amending the list of selling stockholders to include the pledgee, transferee or other successors in interest as selling stockholders under this prospectus. The selling stockholders also may transfer the shares of common stock in other circumstances, in which case the transferees, pledgees or other successors in interest will be the selling beneficial owners for purposes of this prospectus.

In connection with the sale of our common stock or interests therein, the selling stockholders may enter into hedging transactions with broker-dealers or other financial institutions, which may in turn engage in short sales of the common stock in the course of hedging the positions they assume. The selling stockholders may also sell shares of our common stock short and deliver these securities to close out their short positions, or loan or pledge the common stock to broker-dealers that in turn may sell these securities. The selling stockholders may also enter into option or other transactions with broker-dealers or other financial institutions or the creation of one or more derivative securities which require the delivery to such broker-dealer or other financial institution of shares offered by this prospectus, which shares such broker-dealer or other financial institution may resell pursuant to this prospectus (as supplemented or amended to reflect such transaction).

The aggregate proceeds to the selling stockholders from the sale of the common stock offered by them will be the purchase price of the common stock less discounts or commissions, if any. Each of the selling stockholders reserves the right to accept and, together with their agents from time to time, to reject, in whole or in part, any proposed purchase of common stock to be made directly or through agents. We will not receive any of the proceeds from this offering. Upon any exercise of the warrants by payment of cash, however, we will receive the exercise price of the warrants.

The selling stockholders also may resell all or a portion of the shares in open market transactions in reliance upon Rule 144 under the Securities Act, provided that they meet the criteria and conform to the requirements of that rule.

The selling stockholders and any underwriters, broker-dealers or agents that participate in the sale of the common stock or interests therein may be “underwriters” within the meaning of Section 2(11) of the Securities Act. Any discounts, commissions, concessions or profit they earn on any resale of the shares may be underwriting discounts and commissions under the Securities Act. Selling stockholders who are “underwriters” within the meaning of Section 2(11) of the Securities Act will be subject to the prospectus delivery requirements of the Securities Act.

To the extent required, the shares of our common stock to be sold, the names of the selling stockholders, the respective purchase prices and public offering prices, the names of any agents, dealers or underwriters, and any applicable commissions or discounts with respect to a particular offer will be set forth in an accompanying prospectus supplement or, if appropriate, a post-effective amendment to the registration statement that includes this prospectus.

In order to comply with the securities laws of some states, if applicable, the common stock may be sold in these jurisdictions only through registered or licensed brokers or dealers. In addition, in some states the common stock may not be sold unless it has been registered or qualified for sale or an exemption from registration or qualification requirements is available and is complied with.

We have advised the selling stockholders that the anti-manipulation rules of Regulation M under the Securities Exchange Act of 1934, as amended, may apply to sales of shares in the market and to the activities of the selling stockholders and their affiliates. In addition, to the extent applicable, we will make copies of this prospectus (as it may be supplemented or amended from time to time) available to the selling stockholders for the purpose of satisfying the prospectus delivery requirements of the Securities Act. The selling stockholders may indemnify any broker-dealer that participates in transactions involving the sale of the shares against certain liabilities, including liabilities arising under the Securities Act.

We have agreed to indemnify the selling stockholders against liabilities, including liabilities under the Securities Act and state securities laws, relating to the registration of the shares offered by this prospectus.

We have agreed with the selling stockholders to use commercially reasonable efforts to cause the registration statement of which this prospectus constitutes a part to remain continuously effective until the earlier of (1) such time as all of the shares covered by this prospectus have been disposed of pursuant to and in accordance with such registration statement or (2) the date on which all of the shares may be sold without restriction pursuant to Rule 144 of the Securities Act.

LEGAL MATTERS

The validity of the securities offered pursuant to this prospectus will be passed upon by Reed Smith LLP.

EXPERTS

The consolidated financial statements of Spectral AI, Inc. as of December 31, 2024 and 2023 and for each of the years in the two-year period ended December 31, 2024, have been incorporated by reference herein in reliance upon the report of KPMG LLP, independent registered public accounting firm, incorporated by reference herein, and upon the authority of said firm as experts in accounting and auditing.

WHERE YOU CAN FIND MORE INFORMATION

We are subject to the informational requirements of the Exchange Act, and in accordance therewith file annual, quarterly and current reports, proxy statements and other information with the SEC. The SEC maintains an internet website at www.sec.gov that contains periodic and current reports, proxy and information statements and other information regarding registrants that are filed electronically with the SEC.

These documents are also available, free of charge, through the Investors section of our website, which is located at <https://investors.spectral-ai.com/>.

We have filed with the SEC a registration statement under the Securities Act of 1933, as amended, relating to the offering of these securities. The registration statement, including the attached exhibits, contains additional relevant information about us and the securities. This prospectus does not contain all of the information set forth in the registration statement. You can obtain a copy of the registration statement for free at www.sec.gov. The registration statement and the documents referred to below under “Incorporation of Documents by Reference” are also available on our website, <https://investors.spectral-ai.com/>. The reference to our website in this prospectus is an inactive textual reference only and is not a hyperlink. The contents of our website are not part of this prospectus, and you should not consider the contents of our website in making an investment decision with respect to our securities.

We have not incorporated by reference into this prospectus the information on our website, and you should not consider it to be a part of this prospectus.

INFORMATION INCORPORATED BY REFERENCE

The SEC allows us to “incorporate by reference” the information we have filed with it, which means that we can disclose important information to you by referring you to those documents. The information we incorporate by reference is an important part of this prospectus, and later information that we file with the SEC will automatically update and supersede this information. We specifically are incorporating by reference the following documents filed with the SEC (excluding those portions of any Current Report on Form 8-K that are furnished and not deemed “filed” pursuant to the General Instructions of Form 8-K):

- our Annual Report on [Form 10-K](#) for the fiscal year ended December 31, 2024, filed with the SEC on March 31, 2025;
- our Quarterly Report on [Form 10-Q](#) for the fiscal quarter ended March 31, 2025, filed with the SEC on May 15, 2025, and our Quarterly Report on [Form 10-Q](#) for the fiscal quarter ended June 30, 2025, filed with the SEC on August 13, 2025;
- our Current Reports on Form 8-K filed with the SEC on on [March 4, 2025](#), [March 4, 2025](#), [March 26, 2025](#), [April 2, 2025](#), [May 29, 2025](#), [May 30, 2025](#), [June 3, 2025](#) and [October 24, 2025](#) (other than any portions thereof deemed furnished and not filed);
- our Definitive Proxy Statement on [Schedule 14A](#), filed with the SEC on April 17, 2025 (but only with respect to information required by Part III of our Annual Report on Form 10-K for the year ended December 31, 2024, which information updated and superseded information included in Part III of our Annual Report on Form 10-K for the year ended December 31, 2024); and
- the description of our common stock contained in our [Form 10-K](#), filed with the Commission on March 31, 2025, and any amendment or report filed with the Commission for purposes of updating such description.

All reports and definitive proxy information statements subsequently filed after the date of this initial registration statement and prior to effectiveness of this registration statement by the Company pursuant to Sections 13(a), 13(c), 14 and 15(d) of the Exchange Act, but excluding information furnished to, rather than filed with, the SEC, shall be deemed to be incorporated by reference herein and to be a part hereof from the date such documents are filed.

Any statement contained herein or in any document incorporated or deemed to be incorporated by reference shall be deemed to be modified or superseded for purposes of the registration statement of which this prospectus forms a part to the extent that a statement contained in any other subsequently filed document which also is or is deemed to be incorporated by reference modifies or supersedes such statement. Any such statement so modified or superseded shall not be deemed to constitute a part of the registration statement of which this prospectus forms a part, except as so modified or superseded.

You should rely only on the information incorporated by reference or provided in this prospectus. We have not authorized anyone else to provide you with different information. You should not assume that the information in this prospectus is accurate as of any date other than the date of this prospectus or the date of the documents incorporated by reference in this prospectus.

We will provide without charge to each person to whom a copy of this prospectus is delivered, upon written or oral request, a copy of any or all of the information that has been incorporated by reference in this prospectus but not delivered with this prospectus (other than an exhibit to these filings, unless we have specifically incorporated that exhibit by reference in this prospectus). Any such request should be addressed to us at:

Spectral AI, Inc.
Attn: Vincent S. Capone, Esq.
Chief Financial Officer & General Counsel
2515 McKinney Ave, Suite 1000
Dallas, TX 75201
972-499-4934

You may also access the documents incorporated by reference in this prospectus through our website at <https://investors.spectral-ai.com/>. Except for the specific incorporated documents listed above, no information available on or through our website shall be deemed to be incorporated in this prospectus or the registration statement of which it forms a part.



Up to 4,989,502 shares of Common Stock

PRELIMINARY PROSPECTUS

, 2025

PART II
INFORMATION NOT REQUIRED IN PROSPECTUS

Item 14. Other Expenses of Issuance and Distribution.

The following table sets forth the estimated costs and expenses payable by the registrant expected to be incurred in connection with the issuance and distribution of the securities being registered hereby (other than underwriting discounts and commissions). All of such expenses are estimates, except for the SEC registration fee.

	Amount to be Paid
SEC registration fee	\$ 1,488.35
Printing fees and expenses	*
Transfer agent and registrar fees	*
Accounting fees and expenses	*
Legal fees and expenses	*
Miscellaneous ⁽¹⁾	*
Total	\$ *

* These fees are calculated based on the securities offered and the number of issuances and accordingly cannot be estimated at this time.

(1) Pursuant to the Purchase Agreement, the Company will pay the registration expenses, which are generally the fees and expenses associated with the registration and sale of the offered shares by the selling stockholders, except underwriting fees, discounts or commissions, any out-of-pocket expenses (other than fees and expenses incurred in connection with complying with state securities or blue sky laws) of the selling stockholders or the fees and disbursements of any underwriter.

Item 15. Indemnification of Directors and Officers.

Section 102 of the DGCL permits a corporation to eliminate the personal liability of directors of a corporation to the corporation or its stockholders for monetary damages for a breach of fiduciary duty as a director, except where the director breached his duty of loyalty, failed to act in good faith, engaged in intentional misconduct or knowingly violated a law, authorized the payment of a dividend or approved a stock repurchase in violation of Delaware corporate law or obtained an improper personal benefit. Our Charter provides that no director of the Registrant shall be personally liable to it or its stockholders for monetary damages for any breach of fiduciary duty as a director, notwithstanding any provision of law imposing such liability, except to the extent that the DGCL prohibits the elimination or limitation of liability of directors for breaches of fiduciary duty.

Section 145 of the DGCL provides that a corporation has the power to indemnify a director, officer, employee, or agent of the corporation, or a person serving at the request of the corporation for another corporation, partnership, joint venture, trust or other enterprise in related capacities against expenses (including attorneys' fees), judgments, fines and amounts paid in settlement actually and reasonably incurred by the person in connection with an action, suit or proceeding to which he was or is a party or is threatened to be made a party to any threatened, ending or completed action, suit or proceeding by reason of such position, if such person acted in good faith and in a manner he reasonably believed to be in or not opposed to the best interests of the corporation, and, in any criminal action or proceeding, had no reasonable cause to believe his conduct was unlawful, except that, in the case of actions brought by or in the right of the corporation, no indemnification shall be made with respect to any claim, issue or matter as to which such person shall have been adjudged to be liable to the corporation unless and only to the extent that the Delaware Court of Chancery or other adjudicating court determines that, despite the adjudication of liability but in view of all of the circumstances of the case, such person is fairly and reasonably entitled to indemnity for such expenses which the Delaware Court of Chancery or such other court shall deem proper.

Our Charter provides that we will indemnify each person who was or is a party or threatened to be made a party to any threatened, pending or completed action, suit or proceeding (other than an action by or in the right of us) by reason of the fact that he or she is or was, or has agreed to become, a director or officer, or is or was serving, or has agreed to serve, at our request as a director, officer, partner, employee or trustee of, or in a similar capacity with, another corporation, partnership, joint venture, trust or other enterprise (all such persons being referred to as an "Indemnitee"), or by reason of any action alleged to have been taken or omitted in such capacity, against all expenses (including attorneys' fees), judgments, fines and amounts paid in settlement actually and reasonably incurred in connection with such action, suit or proceeding and any appeal therefrom, if such Indemnitee acted in good faith and in a manner he or she reasonably believed to be in, or not opposed to, our best interests, and, with respect to any criminal action or proceeding, he or she had no reasonable cause to believe his or her conduct was unlawful. Our Charter provides that we will indemnify any Indemnitee who was or is a party to an action or suit by or in the right of us to procure a judgment in our favor by reason of the fact that the Indemnitee is or was, or has agreed to become, a director or officer, or is or was serving, or has agreed to serve, at our request as a director, officer, partner, employee or trustee of, or in a similar capacity with, another corporation, partnership, joint venture, trust or other enterprise, or by reason of any action alleged to have been taken or omitted in such capacity, against all expenses (including attorneys' fees) and, to the extent permitted by law, amounts paid in settlement actually and reasonably incurred in connection with such action, suit or proceeding, and any appeal therefrom, if the Indemnitee acted in good faith and in a manner he or she reasonably believed to be in, or not opposed to, our best interests, except that no indemnification shall be made with respect to any claim, issue or matter as to which such person shall have been adjudged to be liable to us, unless a court determines that, despite such adjudication but in view of all of the circumstances, he or she is entitled to indemnification of such expenses. Notwithstanding the foregoing, to the extent that any Indemnitee has been successful, on the merits or otherwise, he or she will be indemnified by us against all expenses (including attorneys' fees) actually and reasonably incurred in connection therewith. Expenses must be advanced to an Indemnitee under certain circumstances.

We have entered into indemnification agreements with each of our directors and officers. These indemnification agreements may require us, among other things, to indemnify our directors and officers for some expenses, including attorneys' fees, judgments, fines and settlement amounts incurred by a director or officer in any action or proceeding arising out of his or her service as one of our directors or officers, or any of our subsidiaries or any other company or enterprise to which the person provides services at our request.

We maintain a general liability insurance policy that covers certain liabilities of directors and officers of our corporation arising out of claims based on acts or omissions in their capacities as directors or officers.

In any underwriting agreement we enter into in connection with the sale of common stock being registered hereby, the underwriters will agree to indemnify, under certain conditions, us, our directors, our officers and persons who control us within the meaning of the Securities Act against certain liabilities.

Item 16. Exhibits.

(a) Exhibits.

Exhibit Number	Description of Document
2.1	Business Combination Agreement, by and among Rosecliff Acquisition Corp I, Merger Sub I, Merger Sub II and Spectral MD Holdings, Ltd., dated as of April 11, 2023 (incorporated by reference to Annex A of the Registration Statement on Form S-4 (File No. 333-271566)).
3.1	Second Amended and Restated Certificate of Incorporation of Spectral AI, Inc. (incorporated by reference to the Company's Current Report on Form 8-K, filed with the SEC on September 15, 2023).
3.2	Amended and Restated Bylaws of Spectral AI, Inc. (incorporated by reference to the Company's Current Report on Form 8-K, filed with the SEC on September 15, 2023).
4.1	Description of Securities (incorporated by reference to the Registrant's Annual Report on Form 10-K filed on March 31, 2022).
4.2	Form of Warrant (incorporated by reference to the Registrants Current Report on Form 8-K filed on October 24, 2025).
4.3	Form of Pre-Funded Warrant (incorporated by reference to the Registrants Current Report on Form 8-K filed on October 24, 2025).
4.4	Registration Rights Agreement, dated October 24, 2025 (incorporated by reference to the Registrants Current Report on Form 8-K filed on October 24, 2025).
10.1	Form of Securities Purchase Agreement, dated October 22, 2025, by and between Spectral AI, Inc. and Hudson Bay Master Fund Ltd. (incorporated by reference to the Registrants Current Report on Form 8-K filed on October 24, 2025).
10.2*	Confirmation Agreement, dated October 14, 2025, between the Company and Dominari Securities, LLC.
5.1*	Opinion of Reed Smith LLP
23.1*	Consent of KPMG, LLP, independent registered public accounting firm
23.2*	Consent of Reed Smith LLP (included in Exhibit 5.1)
24.1*	Power of Attorney (included in Part II of this Registration Statement)
107*	Filing Fee Table

* Filed herewith.

Item 17. Undertakings.

(a) The undersigned registrant hereby undertakes:

(1) To file, during any period in which offers or sales are being made, a post-effective amendment to this registration statement:

(i) to include any prospectus required by Section 10(a)(3) of the Securities Act of 1933;

(ii) To reflect in the prospectus any facts or events arising after the effective date of the registration statement (or the most recent post-effective amendment thereof) which, individually or in the aggregate, represent a fundamental change in the information set forth in the registration statement. Notwithstanding the foregoing, any increase or decrease in volume of securities offered (if the total dollar value of securities offered would not exceed that which was registered) and any deviation from the low or high end of the estimated maximum offering range may be reflected in the form of prospectus filed with the Commission pursuant to Rule 424(b) (§ 230.424(b) of this chapter) if, in the aggregate, the changes in volume and price represent no more than 20% change in the maximum aggregate offering price set forth in the "Calculation of Filing Fee Tables" or "Calculation of Registration Fee" table, as applicable, in the effective registration statement; and

(iii) to include any material information with respect to the plan of distribution not previously disclosed in the registration statement or any material change to such information in the registration statement;

provided, however, that paragraphs (1)(i), (1)(ii) and (1)(iii) do not apply if the information required to be included in a post-effective amendment by those paragraphs is contained in reports filed with or furnished to the Commission by the registrant pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934 that are incorporated by reference in the registration statement, or is contained in a form of prospectus filed pursuant to Rule 424(b) that is part of the registration statement.

(2) That, for the purpose of determining any liability under the Securities Act of 1933, each such post-effective amendment shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

(3) To remove from registration by means of a post-effective amendment any of the securities being registered which remain unsold at the termination of the offering.

(4) That, for the purpose of determining liability under the Securities Act of 1933 to any purchaser:

(i) If the registrant is relying on Rule 430B (§230.430B of this chapter):

(A) Each prospectus filed by the registrant pursuant to Rule 424(b)(3) shall be deemed to be part of the registration statement as of the date the filed prospectus was deemed part of and included in the registration statement; and

(B) Each prospectus required to be filed pursuant to Rule 424(b)(2), (b)(5), or (b)(7) as part of a registration statement in reliance on Rule 430B relating to an offering made pursuant to Rule 415(a)(1)(i), (vii), or (x) for the purpose of providing the information required by Section 10(a) of the Securities Act of 1933 shall be deemed to be part of and included in the registration statement as of the earlier of the date such form of prospectus is first used after effectiveness or the date of the first contract of sale of securities in the offering described in the prospectus. As provided in Rule 430B, for liability purposes of the issuer and any person that is at that date an underwriter, such date shall be deemed to be a new effective date of the registration statement relating to the securities in the registration statement to which that prospectus relates, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof. *Provided, however*, that no statement made in a registration statement or prospectus that is part of the registration statement or made in a document incorporated or deemed incorporated by reference into the registration statement or prospectus that is part of the registration statement will, as to a purchaser with a time of contract of sale prior to such effective date, supersede or modify any statement that was made in the registration statement or prospectus that was part of the registration statement or made in any such document immediately prior to such effective date.

(ii) If the registrant is subject to Rule 430C, each prospectus filed pursuant to Rule 424(b) as part of a registration statement relating to an offering, other than registration statements relying on Rule 430B or other than prospectuses filed in reliance on Rule 430A, shall be deemed to be part of and included in the registration statement as of the date it is first used after effectiveness. *Provided, however,* that no statement made in a registration statement or prospectus that is part of the registration statement or made in a document incorporated or deemed incorporated by reference into the registration statement or prospectus that is part of the registration statement will, as to a purchaser with a time of contract of sale prior to such first use, supersede or modify any statement that was made in the registration statement or prospectus that was part of the registration statement or made in any such document immediately prior to such date of first use.

(5) That, for the purpose of determining liability of the registrant under the Securities Act of 1933 to any purchaser in the initial distribution of the securities, the undersigned registrant undertakes that in a primary offering of securities of the undersigned registrant pursuant to this registration statement, regardless of the underwriting method used to sell the securities to the purchaser, if the securities are offered or sold to such purchaser by means of any of the following communications, the undersigned registrant will be a seller to the purchaser and will be considered to offer or sell such securities to such purchaser:

(i) Any preliminary prospectus or prospectus of the undersigned registrant relating to the offering required to be filed pursuant to Rule 424;

(ii) Any free writing prospectus relating to the offering prepared by or on behalf of the undersigned registrant or used or referred to by the undersigned registrant;

(iii) The portion of any other free writing prospectus relating to the offering containing material information about the undersigned registrant or its securities provided by or on behalf of the undersigned registrant; and

(iv) Any other communication that is an offer in the offering made by the undersigned registrant to the purchaser.

(b) The undersigned registrant hereby undertakes that, for purposes of determining any liability of the registrant under the Securities Act of 1933, each filing of the registrant's annual report pursuant to Section 13(a) or Section 15(d) of the Securities Exchange Act of 1934 (and, where applicable, each filing of an employee benefit plan's annual report pursuant to section 15(d) of the Securities Exchange Act of 1934) that is incorporated by reference in the registration statement shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

(c) Insofar as indemnification for liabilities arising under the Securities Act of 1933 may be permitted to directors, officers and controlling persons of the registrant pursuant to the foregoing provisions, or otherwise, the registrant has been advised that in the opinion of the Securities and Exchange Commission such indemnification is against public policy as expressed in the Securities Act and is, therefore, unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the registrant of expenses incurred or paid by a director, officer or controlling person of the registrant in the successful defense of any action, suit or proceeding) is asserted by such director, officer or controlling person in connection with the securities being registered, the registrant will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Securities Act of 1933 and will be governed by the final adjudication of such issue.

(d) The undersigned registrant hereby undertakes that:

(1) For purposes of determining any liability under the Securities Act of 1933, the information omitted from the form of prospectus filed as part of this registration statement in reliance upon Rule 430A and contained in a form of prospectus filed by the registrant pursuant to Rule 424(b) (1) or (4) or 497(h) under the Securities Act shall be deemed to be part of this registration statement as of the time it was declared effective.

(2) For the purpose of determining any liability under the Securities Act of 1933, each post-effective amendment that contains a form of prospectus shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, the registrant certifies that it has reasonable grounds to believe that it meets all of the requirements for filing on Form S-3 and has duly caused this registration statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of Dallas, State of Texas, on October 30, 2025.

Spectral AI, Inc.

By: /s/ J. Michael DiMaio
Name: J. Michael DiMaio
Title: Chairman (Principal Executive Officer)

POWER OF ATTORNEY

Each person whose signature appears below constitutes and appoints Vincent Capone, with full power to act alone and without the others, his true and lawful attorney-in-fact, with full power of substitution, and with the authority to execute in the name of each such person, any and all amendments (including without limitation, post-effective amendments) to this registration statement on Form S-3, to sign any and all additional registration statements relating to the same offering of securities as this registration statement that are filed pursuant to Rule 462(b) of the Securities Act of 1933, and to file such registration statements with the Securities and Exchange Commission, together with any exhibits thereto and other documents therewith, necessary or advisable to enable the registrant to comply with the Securities Act of 1933, and any rules, regulations and requirements of the Securities and Exchange Commission in respect thereof, which amendments may make such other changes in the registration statement as the aforesaid attorney-in-fact executing the same deems appropriate.

Pursuant to the requirements of the Securities Act of 1933, this registration statement has been signed by the following persons in the capacities and on the dates indicated.

<u>Signature</u>	<u>Title</u>	<u>Date</u>
<u>/s/ J. Michael DiMaio</u> J. Michael DiMaio	Chairman (Principal Executive Officer)	October 30, 2025
<u>/s/ Vincent S. Capone</u> Vincent S. Capone	Chief Financial Officer (Principal Financial Officer and Principal Accounting Officer)	October 30, 2025
<u>/s/ Colin Bristow</u> Colin Bristow	Director	October 30, 2025
<u>/s/ Richard Cotton</u> Richard Cotton	Director	October 30, 2025
<u>/s/ Martin Mellish</u> Martin Mellish	Director	October 30, 2025
<u>/s/ Deepak Sadagopan</u> Deepak Sadagopan	Director	October 30, 2025
<u>/s/ Marion Snyder</u> Marion Snyder	Director	October 30, 2025



Reed Smith LLP
599 Lexington Avenue
New York, NY 10022-7650
+1 212 521 5400
Fax +1 212 521 5450
reedsmith.com

October 30, 2025

Spectral AI, Inc.
2515 McKinney Avenue, Suite 1000
Dallas, Texas 75201

Ladies and Gentlemen:

This opinion is furnished to you in connection with the Registration Statement on Form S-3 (the “**Registration Statement**”) filed by Spectral AI, Inc., a Delaware corporation (the “**Company**”), with the Securities and Exchange Commission (the “**Commission**”) on the date hereof in connection with the registration under the Securities Act of 1933, as amended (the “**Securities Act**”), for resale by the selling stockholders named in the Registration Statement (the “**Selling Stockholders**”) including their transferees, pledgees, donees or successors of up to 4,989,502 shares (the “**Shares**”) of the Company’s common stock, par value \$0.0001 (“**Common Stock**”), issuable upon the exercise of (i) warrants (the “**Investor Warrants**”) to purchase up to 4,000,000 shares of Common Stock issued pursuant to a Securities Purchase Agreement, dated October 22, 2025, by and between the Company and the Hudson Bay Master Fund Ltd. (the “**Purchase Agreement**”), (ii) pre-funded warrants (the “**Pre-Funded Warrants**”) to purchase up to 935,000 shares of Common Stock pursuant to the Purchase Agreement, and (iii) warrants (the “**Dominari Warrants**”) and, together with the Investor Warrants, the “**Warrants**”) to purchase up to 54,502 shares of Common Stock issued to Dominari Securities, LLC pursuant to a Confirmation Agreement, dated October 14, 2025, between the Company and Dominari Securities, LLC.

In rendering the opinion set forth herein, we have examined originals or copies, certified or otherwise identified to our satisfaction, of such documents, corporate records, certificates of public officials and other instruments as we have deemed necessary or advisable.

In such examination, we have assumed the genuineness of all signatures, the legal capacity of natural persons, the authenticity of all items submitted to us as originals, the conformity with originals of all items submitted to us as copies, and the authenticity of the originals of such copies. As to any facts material to the opinions expressed herein that we did not independently establish or verify, we have relied upon statements and representations of officers and other representatives of the Company and public officials.

This opinion is based solely on the General Corporation Law of the State of Delaware (including all related provisions of the Delaware Constitution and all reported judicial decisions interpreting the General Corporation Law of the State of Delaware and the Delaware Constitution).

Based upon and subject to the foregoing, we are of the opinion that the Shares have been duly authorized for issuance and, when issued and paid for upon exercise of the Warrants and the Pre-Funded Warrants in accordance with the terms thereof, the Shares will be validly issued, fully paid, and nonassessable.

We consent to the inclusion of this opinion as an exhibit to the Registration Statement and further consent to all references to us under the caption “Legal Matters” in the Prospectus. In giving this consent, we do not admit that we are in the category of persons whose consent is required under Section 7 of the Securities Act or the rules and regulations of the Commission.

Very truly yours,

/s/ Reed Smith LLP
REED SMITH LLP

Legal Op:

LER/MSL

Confirmation Agreement

This Confirmation Agreement (the “Notice”) to the Placement Agency Agreement (as defined herein) is made as of October 14, 2025, by and among Spectral AI, Inc. (the “Company”) and Dominari Securities, LLC (“Dominari”). Capitalized terms used but not defined in this notice shall have the meanings assigned to them in the Placement Agent Agreement (defined below).

WHEREAS, on March 21, 2025, the parties entered into that certain Placement Agency Agreement, by and between Dominari and the Company (the “Placement Agency Agreement”);

WHEREAS, under Section 9 of the Placement Agency Agreement, Dominari has a right to participate in any Subsequent Financing (as defined in the Placement Agent Agreement) for a period of 12 months from the effective date of the Placement Agent Agreement;

WHEREAS, the Company is considering a potential transaction with Northland Securities, Inc. that would constitute a Subsequent Financing (the “Transaction”);

WHEREAS, following the closing of the Transaction, the Company has agreed to issue Dominari a warrant to purchase shares of the Company’s common stock, as detailed below; and

WHEREAS, Dominari has agreed to waive the application of the provisions of Section 9 of the Placement Agency Agreement as it relates to the Transaction.

NOW, THEREFORE, in consideration of the mutual covenants and agreements set forth hereinafter (including in the Recitals), and for other good and valuable consideration, the receipt of and sufficiency of which are hereby acknowledged, the undersigned hereby agree as follows:

1. Waiver of Right of Participation. Dominari agrees that the right to participate in a Subsequent Financing described in Section 9 of the Placement Agency Agreement is hereby waived by Dominari as of the date of this Notice for purposes of the Transaction.
2. Issuance of a Warrant. As consideration for waiving Dominari’s right of participation, following the closing of the Transaction, the Company agrees to issue to Dominari a warrant to purchase shares of common stock of the Company (the “Warrant”). The number of shares set forth in the Warrant shall be calculated as follows: (i) the product of (a) six percent (6.00%) multiplied by (b) thirty percent (30.00%) to the amount raised in the Transaction divided by (ii) the exercise price as set forth in the Warrant. The Warrant shall be issued with an exercise price and term consistent with the terms offered to the other participants in the Transaction. The Warrant shall have customary piggyback registration rights and shall contain a standard cashless exercise provision.
3. No Other Changes or Modifications. Except as expressly set forth in Section 1 above, all other terms and conditions in the Placement Agency Agreement remain unchanged and in full force and effect.
4. Counterparts. This Notice may be signed in any number of counterparts with the same effect as if the signatures to each counterpart were upon a single instrument, and all such counterparts together shall be deemed an original of this Notice. The parties acknowledge and agree that this Notice may be executed via “wet” signature or electronic mark, and that delivery of any such signature, agreement or instrument by means of electronic transmission, electronic signature or otherwise, shall be treated in all manner and respects and for all purposes as an original signature, agreement or instrument and shall be considered to have the same binding legal effect as if it were the original signed version thereof delivered in person.

[Signature Page Follows]

IN WITNESS WHEREOF, the parties hereto have executed this Notice as of the date first set forth above.

SPECTRAL AI, INC.

Name: /s/ Vincent S. Capone
Print Name: Vincent S. Capone
Title: Chief Financial Officer and General Counsel
Date: 10/15/2025

DOMINARI SECURITIES, LLC

Name: /s/ Kyle Wool
Print Name: Kyle Wool
Title: Chief Executive Officer
Date: 10/15/2025



KPMG LLP
Suite 1400
2323 Ross Avenue
Dallas, TX 75201-2721

Consent of Independent Registered Public Accounting Firm

We consent to the use of our report dated March 31, 2025, with respect to the consolidated financial statements of Spectral AI, Inc., incorporated herein by reference, and to the reference to our firm under the heading "Experts" in the prospectus.

Dallas, Texas
October 30, 2025

KPMG LLP

KPMG LLP, a Delaware limited liability partnership and a member firm of the KPMG global organization of independent member firms affiliated with KPMG International Limited, a private English company limited by guarantee.

CALCULATION OF FILING FEE TABLES

S-3

Spectral AI, Inc.

Table 1: Newly Registered and Carry Forward Securities

Line Item Type	Security Type	Security Class Title	Notes	Fee Calculation Rule	Amount Registered	Proposed Maximum Offering Price Per Unit	Maximum Aggregate Offering Price	Fee Rate	Amount of Registration Fee
<i>Newly Registered Securities</i>									
Fees to be Paid	Equity	Common Stock	(1)	Other	4,989,502	\$	\$ 10,777,324.32	0.0001381	\$ 1,488.35
							Total Offering Amounts:	\$ 10,777,324.32	1,488.35
							Total Fees Previously Paid:		0.00
							Total Fee Offsets:		0.00
							Net Fee Due:		\$ 1,488.35

Offering Note(s)

- (1) In accordance with Rule 416 under the Securities Act of 1933, as amended, this registration statement shall be deemed to cover an indeterminate number of additional securities to be offered or issued from stock splits, stock dividends or similar transactions.

Represents up to 4,989,502 shares of common stock issuable upon exercise of (i) warrants issued to a certain investor to purchase up to 4,000,000 shares of our common stock, (ii) pre-funded warrants issued to a certain investor to purchase up to 935,000 shares of our common stock, and (iii) warrants to purchase up to 54,502 shares of our common stock issued to Dominari Securities, LLC.

Estimated solely for the purpose of calculating the registration fee, based on the average of the high and low prices of the Common Stock on the Nasdaq Stock Market LLC ("Nasdaq") on October 27, 2025 (\$2.16 per share), in accordance with Rule 457(c) of the Securities Act.

Calculated pursuant to Rule 457 of the Securities Act by multiplying the proposed maximum aggregate offering price of securities to be registered by 0.00013810.