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

FORM 8-K

CURRENT REPORT

Pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934

Date of Report (Date of earliest event reported): August 07, 2024

Palladyne AI Corp.

(Exact name of Registrant as Specified in Its Charter)

Delaware	**001-39897**	**85-2838301**
(State or Other Jurisdiction of Incorporation)	**(Commission File Number)**	**(IRS Employer Identification No.)**
650 South 500 West, Suite 150 Salt Lake City, Utah		**84101**
(Address of Principal Executive Offices)		**(Zip Code)**

Registrant's Telephone Number, Including Area Code: (888) 927-7296

(Former Name or Former Address, if Changed Since Last Report)

Check the appropriate box below if the Form 8-K filing is intended to simultaneously satisfy the filing obligation of the registrant under any of the following provisions:

☐ Written communications pursuant to Rule 425 under the Securities Act (17 CFR 230.425)

☐ Soliciting material pursuant to Rule 14a-12 under the Exchange Act (17 CFR 240.14a-12)

☐ Pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act (17 CFR 240.14d-2(b))

☐ Pre-commencement communications pursuant to Rule 13e-4(c) under the Exchange Act (17 CFR 240.13e-4(c))

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common Stock, par value $0.0001 per share	PDYN	The Nasdaq Stock Market LLC
Redeemable warrants, exercisable for shares of Common Stock at an exercise price of $69.00 per share	PDYNW	The Nasdaq Stock Market LLC

Indicate by check mark whether the registrant is an emerging growth company as defined in Rule 405 of the Securities Act of 1933 (§ 230.405 of this chapter) or Rule 12b-2 of the Securities Exchange Act of 1934 (§ 240.12b-2 of this chapter).

Emerging growth company ☒

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 pursuant to Section 13(a) of the Exchange Act. ☐

Item 2.02 Results of Operations and Financial Condition.

On August 7, 2024, Palladyne AI Corp. (the "Company") issued a press release announcing its financial information related to the three and six month periods ended June 30, 2024, and certain other information. A copy of the press release is furnished herewith as Exhibit 99.1 and is incorporated into this Item 2.02 by reference.

Item 7.01. Regulation FD Disclosure.

On August 7, 2024, the Company posted to the investor relations page of its website at www.palladyneai.com an investor presentation furnished as Exhibit 99.2 to this Current Report on Form 8-K (the "Investor Deck") and incorporated herein by reference. This presentation is expected to be used by the Company in connection with certain future presentations to investors and others. The information contained in the Investor Deck is summary information and contains forward-looking statements that are subject to risks and uncertainties, including those set forth in the Company's filings with the Securities and Exchange Commission (the "SEC"). The information in the Investor Deck is as of August 7, 2024, except for information that is specifically identified as being as of an earlier date. The Company undertakes no obligation to publicly update or revise the information contained in the Investor Deck or this Item 7.01, except as required by law, although it may do so from time to time. Any such updating may be made through the filing of other reports or documents with the SEC, press releases, disclosure on the Company's website or other means of public disclosure.

The Company announces material information to the public through a variety of means, including filings with the SEC, public conference calls, the Company's website (https://www.palladyneai.com/), its investor relations website (https://investor.palladyneai.com/), and its news site (https://www.palladyneai.com/press/). The Company uses these channels, as well as its social media, including its X (@PalladyneAI) and LinkedIn accounts (https://www.linkedin.com/company/palladyneaicorp/), to communicate with investors and the public news and developments about the Company, its products and other matters. Therefore, the Company encourages investors, the media, and others interested in the Company to review the information it makes public in these locations, as such information could be deemed to be material information. The information that can be accessed through hyperlinks or website addresses included in this Current Report on Form 8-K and Exhibits 99.1 and 99.2 attached hereto is deemed not to be incorporated in or part of this Current Report on Form 8-K.

The information in Items 2.02 and 7.01 of this Current Report on Form 8-K and Exhibits 99.1 and 99.2 are being furnished and shall not be deemed to be "filed" for purposes of Section 18 of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), or otherwise subject to the liabilities of that section, and shall not be incorporated by reference into any registration statement or other document filed pursuant to the Securities Act of 1933, as amended, or the Exchange Act, regardless of any general incorporation language contained in such, unless the Company specifically states that the information is to be considered "filed" under the Exchange Act or specifically incorporates it by reference into a filing under the Securities Act or the Exchange Act.

Item 9.01 Financial Statements and Exhibits.

(d) Exhibits.

Exhibit Number	Description
99.1	Press Release dated August 7, 2024, entitled "Palladyne AI Corp Provides Mid-Year Business and Financial Update"
99.2	Investor Presentation
104	Cover Page Interactive Data File (formatted as Inline XBRL)

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned hereunto duly authorized.

Palladyne AI Corp.

Dated: August 7, 2024

By: /s/ Stephen Sonne
Name: Stephen Sonne
Title: Chief Legal Officer & Secretary

Exhibit 99.1

PALLADYNE AI CORP Provides Mid-Year Business and Financial Update

Key Milestones for Commercialization of Artificial Intelligence Software Platform for Industrial Robots and Cobots Achieved on Schedule with Substantially Improved Financial Results

SALT LAKE CITY– August 7, 2024 – Palladyne AI Corp. (NASDAQ: PDYN and PDYNW) ("Palladyne AI"), a developer of artificial intelligence software for robotic platforms in the commercial and defense sectors, today announced recent key business and financial achievements.

Highlights

- Minimal viable product (MVP) version of Palladyne IQ released for customer evaluation and trials -- expect commercial launch of Palladyne IQ during the second half of 2024.
- Successful completion of first on-site trial of Palladyne IQ at a customer location.
- Revenues increased by 112% in the second quarter 2024 as compared to the second quarter of 2023 and increased 72% in the first half of 2024 as compared to the first half of 2023.
- 73% decrease in operating expenses, including restructuring charges, and 81% decrease in net loss in the second quarter 2024 as compared to the second quarter 2023.
- 66% decrease in operating expenses, including restructuring charges and 75% decrease in net loss in the first half 2024 as compared to the first half 2023.
- Key executives and business leaders with prior experience at ABB, Delta Airlines, iRobot and Softbank have joined the company to drive commercialization and customer acquisition.

"Palladyne AI makes robots smarter to do jobs that have historically been too complex to automate. While it is early days, we are seeing strong interest from companies globally that are looking to accelerate operations while driving efficiency by expanding the jobs done by robots," said Ben Wolff, President and Chief Executive Officer of Palladyne AI Corp.

Our AI/ML Software Platform enhances the utility and functionality of third-party stationary and mobile robotic systems by enabling these systems to quickly observe, learn, reason and act in structured, unstructured and dynamic environments. Our software platform is designed with artificial intelligence (AI) and machine learning (ML) technologies that enable robotic systems to perceive their environment and quickly adapt to changing circumstances by generalizing (i.e., learning) from their past experience using dynamic real-time operations "on the edge" (i.e., on the robotic system) without extensive programming and with minimal robot training. We are developing two products based on our AI/ML Software Platform: Palladyne IQ for use with both stationary industrial robots and cobots, and Palladyne Pilot for use with mobile robotic platforms such as drones and unmanned ground vehicles. During the second quarter 2024, we released our MVP version (i.e., a version of the product that is capable of performing the minimal functions necessary but that does not have all the features of and has not been fully tested, debugged or refined into our planned product for general commercial release) of Palladyne IQ and have had our first trial of Palladyne IQ at a customer location.

We believe our software's closed-loop autonomy approach is the key to expedite robot training, expand the tasks that a robot can perform, reduce costly workflow stoppages, mitigate downtimes and reduce human labor requirements. We anticipate that this "human-like" ability to learn and adapt will be a key differentiator in helping our customers achieve and maintain optimal productivity in dynamic or unstructured environments, where new situations and unexpected challenges are more likely to cause delays and costly downtime.

"We have designed our AI/ML Software Platform to be hardware agnostic in order to be compatible with most industrial robots being sold today," continued Mr. Wolff. "We have so far met our key product development milestones on time in 2024, and expect to release the commercial version of Palladyne IQ in the second half of this year. We intend to continue product testing, enhance product features and functionality and work with prospective customers throughout the remainder of this year with a goal of generating revenues from Palladyne IQ product sales beginning in the first half of 2025."

Financial Performance

We are pleased to announce that our efforts to reduce expenses, including our decision to focus on our AI/ML Software Platform and suspend our hardware product development efforts and the two reductions in force announced in 2023, have resulted in a 73% decrease in operating expenses, including restructuring charges, and 81% decrease in net loss in the second quarter 2024 as compared to the second quarter 2023, and a 66% decrease in operating expenses, including restructuring charges, and 75% decrease in net loss in the first half 2024 as compared to the first half 2023. As a result, we have been able to dramatically reduce our use of cash, ending the second quarter of 2024 with a cash (including cash equivalents and marketable securities) balance of $25.8 million.

Revenues increased by 112% in the second quarter of 2024 as compared to the second quarter of 2023 and increased by 72% in the first half of 2024 as compared to the first half of 2023. The increase in the second quarter of 2024 as compared to the second quarter of 2023 was due to accelerated progress on and completion of certain milestones in our product development contracts. The increase in the first half of 2024 was primarily due to legacy product sales in the first quarter of 2024.

About Palladyne AI Corp.

Palladyne AI Corp. (NASDAQ: PDYN) has developed an advanced artificial intelligence (AI) and machine learning (ML) software platform poised to revolutionize the capabilities of robots, enabling them to observe, learn, reason, and act in a manner akin to human intelligence. Our AI/ML Software Platform empowers robots to perceive variations or changes in the real-world environment, enabling them to autonomously maneuver and manipulate objects accurately in response.

The Palladyne AI/ML Software Platform operates on the edge and dramatically reduces the significant effort required to program and deploy robots enabling industrial robots and collaborative robots (cobots) to quickly achieve autonomous capabilities even in dynamic and or complex environments. Designed to enable robotic systems to perceive their environment and quickly adapt to changing circumstances by generalizing (i.e., learning) from their past experience

using dynamic real-time operations “on the edge” (i.e., on the robotic system) without extensive programming and with minimal robot training. Palladyne AI believes its software has wide application, including in industries such as automotive, aviation, construction, defense, general manufacturing, infrastructure inspection, logistics and warehousing. Its applicability extends beyond traditional robotics to include Unmanned Aerial Vehicles (UAVs), Unmanned Ground Vehicles (UGVs), and Remotely Operated Vehicles (ROVs). Palladyne AI’s approach is expected to elevate the return on investment associated with a diverse range of machines that are fixed, fly, float or roll.

By enabling autonomy, reducing programming complexity and enhancing efficiency, we are paving the way for a future where machines can excel in tasks that were once considered beyond their reach.

For more information, please visit www.palladyneai.com and connect with us on LinkedIn at www.linkedin.com/company/palladyneaicorp.

Forward-Looking Statements

This press release contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995, including statements regarding the timing of commercial product release and product revenues, capabilities or future capabilities of the Company’s software platform and products, the benefits of the software platform and products and the industries that could benefit from them, the impact of the software platform and products on robotics, future product development efforts and engagement with potential customers and the applicability of the software platform to different kinds of machines (such as UAVs, UGVs and ROVs and different available industrial robots). Forward-looking statements are inherently subject to risks, uncertainties, and assumptions. Generally, statements that are not historical facts, including statements concerning possible or assumed future actions, business strategies, events, or results of operations, are forward-looking statements. These statements may be preceded by, followed by, or include the words “believes,” “estimates,” “expects,” “projects,” “forecasts,” “may,” “will,” “should,” “seeks,” “plans,” “scheduled,” “anticipates,” “intends” or “continue” or similar expressions. Such forward-looking statements involve risks and uncertainties that may cause actual events, results, or performance to differ materially from those indicated by such statements. These forward-looking statements are based on Palladyne AI’s management’s current expectations and beliefs, as well as a number of assumptions concerning future events. However, there can be no assurance that the events, results, or trends identified in these forward-looking statements will occur or be achieved. Forward-looking statements speak only as of the date they are made, and Palladyne AI is not under any obligation and expressly disclaims any obligation, to update, alter or otherwise revise any forward-looking statement, whether as a result of new information, future events, or otherwise, except as required by law.

Readers should carefully review the statements set forth in the reports which Palladyne AI has filed or will file from time to time with the Securities and Exchange Commission (the “SEC”), in particular the risks and uncertainties set forth in the sections of those reports entitled “Risk Factors” and “Cautionary Note Regarding Forward-Looking Statements,” for a description of risks facing Palladyne AI and that could cause actual events, results or performance to differ from those indicated in the forward-looking statements contained herein. The documents filed by Palladyne AI with the SEC may be obtained free of charge at the SEC’s website at www.sec.gov.

Investor Contact:
IR@palladyneai.com

Press Contact:
PR@palladyneai.com

Exhibit 99.2

Aug 2024

PALLADYNE AI

An AI platform to deliver human-like reasoning & autonomy for commercial and defense applications

Disclaimer

This presentation and any related oral statements contain forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995 including, but not limited to, statements regarding Palladyne AI's financial position; business strategy; projections of market opportunity; anticipated benefits of its technologies; plans and objectives for future operations and offerings; Palladyne AI's product development; expected features, benefits and use cases of Palladyne AI's software platform; expectations and timing related to customer trials and commercial product launches; and the potential success of Palladyne AI's strategy. In some cases, you can identify forward-looking statements by terminology such as "may," "will," "should," "could," "expect," "plan," anticipate," "believe," "estimate," "predict," "intend," "potential," "would," "continue," "ongoing" or the negative of these terms or other comparable terminology. Such forward-looking statements involve risks, uncertainties and assumptions that may cause actual events, results, or performance to differ materially from those indicated by such statements. Certain of these risks and uncertainties are set forth in the section entitled "Risk Factors" and "Cautionary Note Regarding Forward-Looking Statements" in Palladyne AI's filings with the Securities and Exchange Commission (the "SEC") from time to time which are available, free of charge, at the SEC's website at www.sec.gov.

In addition, statements that "we believe" and similar statements reflect Palladyne AI's beliefs and opinions on the relevant subject. These statements are based upon information available to Palladyne AI as of the date of this presentation, and although Palladyne AI believes such information forms a reasonable basis for such statements, such information may be limited or incomplete, and Palladyne AI's statements should not be read to indicate that Palladyne AI has conducted a thorough inquiry into, or review of, all potentially available relevant information. These statements are inherently uncertain and readers are cautioned not to unduly rely upon these statements. If any of these risks materialize or our assumptions prove incorrect, actual results could differ materially from the results implied by these forward-looking statements. In light of the significant uncertainties in these forward-looking statements, you should not regard these statements as a representation or warranty by Palladyne AI or any other person that Palladyne AI will achieve its objectives and plans in any specified time frame, or at all. Except as required by law, Palladyne AI assumes no obligation and does not intend to update any forward-looking statements or to conform these statements to actual results or changes in Palladyne AI's expectations.

This presentation may also contain estimates and other statistical data made by independent parties and by Palladyne AI relating to market size and growth and other industry data. These data involve a number of assumptions and limitations and is subject to change. You are cautioned not to give undue weight to such estimates. Palladyne AI has not independently verified the statistical and other industry data generated by independent parties and contained in this presentation and, accordingly, cannot guarantee their accuracy or completeness. In addition, any projections, assumptions and estimates of Palladyne AI's future performance and the future performance of the markets in which it competes are necessarily subject to a high degree of uncertainty and risk due to a variety of factors. These and other factors could cause results or outcomes to differ materially from those expressed in the estimates made by the independent parties and by Palladyne AI.

Any projections, estimates and targets in this presentation are forward-looking statements that are based on assumptions as of the date they were made and that were inherently subject to significant uncertainties and contingencies, many of which are beyond Palladyne AI's control. Such projections, estimates and targets are included for illustrative purposes only and should not be relied upon as necessarily being indicative of future results. While all projections, estimates and targets are necessarily speculative, Palladyne AI believes that the preparation of prospective financial information involves increasingly higher levels of uncertainty the further out the projection, estimate or target extends from the date of preparation. The assumptions and estimates underlying the projected, expected or target results are inherently uncertain, are subject to change and are subject to a wide variety of significant business, economic, regulatory and competitive risks and uncertainties that could cause actual results to differ materially from those contained in such projections, estimates and targets. The inclusion of projections, estimates and targets in this presentation should not be regarded as an indication that Palladyne AI, or its representatives, considered or consider the financial projections, estimates and targets to be a reliable prediction of future events. Palladyne AI's independent auditors did not audit, review, compile or perform any procedures with respect to the projections for the purpose of their inclusion in this presentation, and accordingly, neither of them expressed an opinion or provided any other form of assurance with respect thereto for the purpose of this presentation.

By attending or receiving this presentation you acknowledge that you will be solely responsible for your own assessment of the market and our market position and that you will conduct your own analysis and be solely responsible for forming your own view of the potential future performance of our business.

Palladyne AI announces material information to the public through a variety of means, including filings with the SEC, public conference calls, Palladyne AI's website (www.palladyneai.com), its investor relations website (https://investor.palladyneai.com/), and its news site (https://www.palladyneai.com/press/). Palladyne AI uses these channels, as well as its social media, including its X (@PalladyneAI) and LinkedIn accounts (https://www.linkedin.com/company/palladyneaicorp/), to communicate with investors and the public news and developments about Palladyne AI, its products and other matters. Therefore, Palladyne AI encourages investors, the media, and others interested in the company to review the information it makes public in these locations, as such information could be deemed to be material information. The information that can be accessed through hyperlinks or website addresses included herein is deemed not to be incorporated in or part of this presentation.

Palladyne AI At-a-Glance

NASDAQ
PDYN

Robotics DNA
30+ years in robotics and robotics software. Legacy leadership in dexterous mobile robot technology across aviation, construction, energy, and defense sectors

Experience
30+ years of robotics engineering excellence. Technology team led by CTO with 25+ years of AI/ML expertise

Salt Lake City, UT
Innovation and operations

~65
team members, world-class robotics & AI/ML software engineers

Palladyne AI: 30+ Years of Innovation and Evolution

Government/DoD R&D ***Dexterous Robotic Systems*** ***Purpose-Built Solutions*** ***AI Software***

1983

Sarcos spins out of University of Utah (1983)

2015

Purchase from Raytheon (2015)

Raytheon buys Sarcos (2007)

2021

Nasdaq

Sarcos Robotics begins trading publicly (2021)

Start AI Software Development (2019)

2023

New AI Software Focus (2023)

2024

Sarcos becomes Palladyne AI

Anticipated customer trials launch

Automation of Complex Tasks Has Been Limited For Several Reasons:

- Most industrial robots are highly programmed for a single specific task and cannot process variations in objects, tasks, or the environment
- Programming and implementation of industrial robots have been time-consuming and costly, often yielding an insufficient customer ROI
- Today's state-of-the-art AI approaches (e.g., LLM[1] for generative AI) require massive data sets to train models, limiting tasks solely to what is contained in the data sets

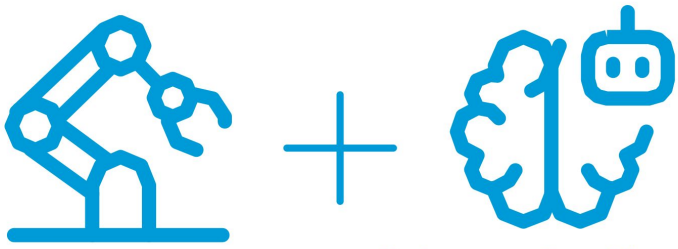
1. Large language models.

Our Vision: To Automate Tasks Too Complex For Traditional Automation By Enabling Machines to Observe, Learn, Reason & Act Like Humans

- Substantially accelerate speed of programming and training
- Increase agility, task sets and use cases
- Reduce need for human intervention and oversight
- Reduce cost of standing up and maintaining automation
- For mobile machines, evolve from human-in-the-loop to human-on-the-loop
- Eliminate need for continuous cloud connectivity

Automate Tasks Too Complex for Traditional Automation

Real-time, Closed-Loop Autonomy Enables Robots to Observe, Learn, Reason & Act Like Humans



Commercial Robots

Hardware-agnostic, real-time closed-loop autonomy software solution

Addresses key challenges in traditional robotic deployments:

- Many processes remain under-automated due to complexity of task or environment
- High cost and complexity of programming and deployment
- Point solutions unable to learn and adapt in real-time, require re-training to perform new or modified tasks

AI for the Real (Physical) World

Most AI Today Lives in the Digital World

Digital World AI/ML Approach

- Objective is to predict outcomes and make recommendations to empower humans – increase efficiency, improve decision making, optimize processes, develop new products, etc.
- Harnesses enormous amounts of data utilizing significant cloud-based computing to gather, ingest, integrate, analyze, and learn from data

Palladyne AI's Real-World AI Approach

- Objective is to enable machines to effectively operate autonomously in real-world environments (structured, dynamic, and unstructured)
- Algorithms designed to enable machines to react to changing circumstances and complete tasks without re-training or reprogramming
- Requires less data – uses on-robot[1] compute to ingest, integrate (fuse), analyze, learn, and react to changing circumstances without connecting to the cloud

"The key for us is enabling autonomy in an unstructured environment that can dynamically change. We focus on generalized autonomy, providing closed-loop functionality to adapt to tasks continuously."

- Dr. Denis Garagić, co-founder and Chief Technology Officer, Palladyne AI

1. Occurs on the robot without a connection to the cloud.

Palladyne™ IQ: AI Software Platform for Robotics

Real-Time Closed-Loop Autonomy Framework Designed to Enable Machines to Observe, Learn, Reason, and Act Like Humans

Act

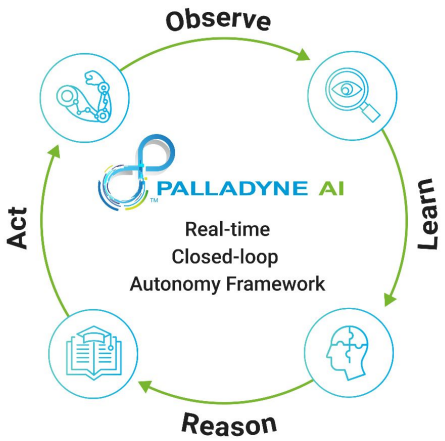
Precise Robotic Control & Completion of Tasks

- Completes the task by accurately controlling the manipulator arm, robot, and/or end effector
- Achieves complex combination of tasks over extended periods of time in a stable, safe, and precise manner

Reason

Human-like, AI-based Reasoning to Determine Best Course of Action Without Human Intervention

- Enables robots to adapt to unexpected events in real-time
- Generates real-time motion plans based on situational awareness at the edge



Real-time perceiving, learning & decision-making occurs at the edge without retraining or cloud connectivity

Observe

Advanced Perception & Observation to Improve Situational Awareness

- Perceives environment using a mix of sensor inputs, e.g., vision, LiDAR, radar, acoustic, etc.
- Utilizes Multi-Modal Sensor Fusion to make perception more robust to sensor occlusion and noise

Learn

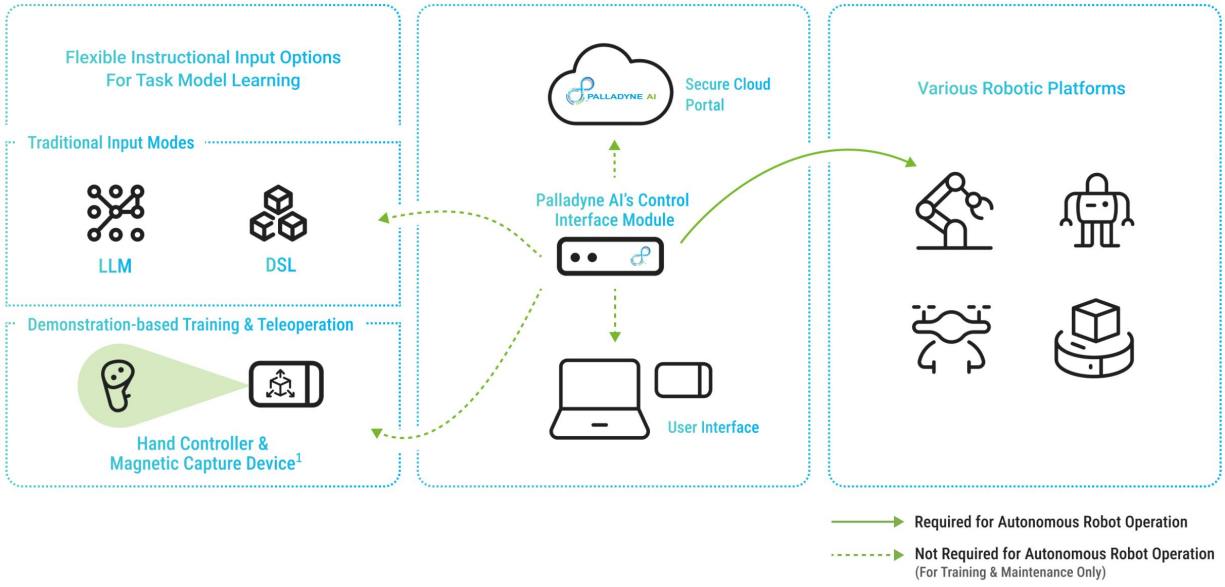
Intelligent Machine Learning to Accelerate Onboarding for New & Complex Tasks

- Robots learn novel or complex combination of tasks via dynamic reasoning and learning
- Learning occurs with minimal demonstrations (1-5)[1]
- Learning model adapts to environments

1. Based on internal testing, actual figures will vary depending on complexity of the task.

Palladyne™ IQ Architecture

Designed to Maximize System Flexibility, Adaptability, Mobility & Learning. Cloud Connectivity Not Required for Autonomous Robot Operations.



1. Only one hand controller is required (and included) in the basic Robot Training & Teleoperation Package; two controllers would be required for applications requiring two manipulators working in concert.

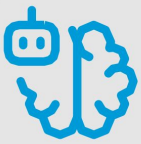
Expected Advantages of Our AI Software Platform

How Our Approach Differs

- Hardware agnostic[1]
- Addresses robotic-specific challenges beyond integration
- Solves for system stability and pose estimation/end effector orientation
- Robots able to plan and execute complex combination of tasks over extended periods of time, even in dynamic and unstructured environments

- Fuses multi-sensor data inputs together to improve system flexibility & adaptability
- Flexible instructional input options for task model learning (i.e., LLMs, DSLs[2], motion-capture-based teleoperation, video input, etc.)
- Can provide language-to-motion instructions ideal for edge computing/robotics applications; doesn't require cost/latency associated with use of LLMs requiring connectivity to the Cloud

- Full stack, closed-loop autonomy enables adaptability to dynamic changes in environment or defined task without human intervention or reprogramming
- Uses probabilistic machine learning techniques to learn the task, accounting for uncertainty and variability
- Dynamic model inference methods require much less training data; robots can learn to generalize with only a few demonstrations (1~ 5)[4]
- Computational efficiencies gained through use of Palladyne AI's domain-specific language models



- Complex task-learning capabilities are similar to humans; in some cases, we believe robots can be trained in significantly less time than it takes relying on currently available state-of-the-art approaches[3]
- Enables edge computing; lower total cost of ownership with no need to incur recurring cloud services costs
- Improves system implementation and startup times

1. Designed to work with most industrial robots being sold today. According to the Proficient Market Insights' "Global Robot Operating System" report, ROS 1 robots comprised of 74% of the total ROS market in 2021, "Global Robot Operating System (ROS) Market 2022 Size Of $ (globenewswire.com).
2. Domain specific languages.
3. Robotics Transformer 1 & 2 deep learning-based approach, 2022 – 2023.
4. Based on internal testing, actual figures will vary depending on complexity of the task.

Hardware Agnostic[1]

Expected to Enable Stationary and Mobile Robotic Platforms to be Agile and Autonomous, Reduce Human Intervention and Increase ROI

Industrial Robots and Cobots

Unmanned Aerial Vehicles

Unmanned Ground Vehicles and Humanoids

1. Designed to work with most industrial robots being sold today. According to the Proficient Market Insights' "Global Robot Operating System" report, ROS 1 robots comprised of 74% of the total ROS market in 2021, "Global Robot Operating System (ROS) Market 2022 Size Of $ (globenewswire.com).

Benefits of Computing on the Edge

Traditional AI / ML Product Solution (Cloud Compute[1,2])

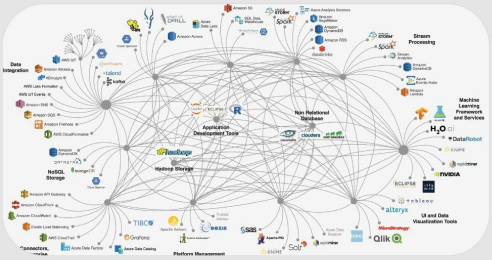
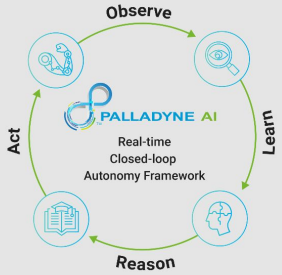


Photo Source: c3.ai

- Complex, extremely large data-set integration
- Enormous amounts of cloud compute required
- Predict outcomes, make recommendations driven by large data sets and models
- Humans utilize in decision making, process improvement and optimizations

Closed-Loop Autonomy for Robotics (Edge Compute)



- Environmental, situational awareness data from local workspace, more constrained (domain specific approach)
- Real-time human-like reasoning applied to base models based on unexpected events
- "Closed-loop" – adapting to those events real-time and update base models without retraining
- Structured and unstructured environments without retraining

1. C3.ai: A Full-Stack IoT Platform for Everyone.
2. The Gordian Knot of Structured Programming (c3.ai).

Hidden Costs of Power-Hungry AI Approaches

How It's Done Today

Photo Source: Freepik

"You'll be astonished how much power it takes to generate a single AI image[1]"

- Stable Diffusion's open-source XL model used almost as much power per image as that required to charge a smartphone fully
- Creating 1,000 images using the same model generated CO_2 emission equivalent of 4.1 miles driven by a gas-powered car
- Power usage by AI servers on a global scale is equivalent to what Argentina uses in 1 year
- Google reported[1] it used 5.6 billion gallons of water to cool their AI servers in 2022 (20% increase over 2021)

Photo Source: Google Research

"RT-1: Robotics Transformer for real-world control at scale[2]"

- Example: Model trained on real-world robotics dataset:
  - 130k episodes
  - 700+ tasks
  - Collected from 13 robots over 17 months

"RT-2: Vision-Language-Action Models[3]"

- "….the model size: 5B vs 55B for the RT-2 PaLI-X variant.."

Photo Source: c3.ai

"The Gordian Knot of Structured Programming[4]"

- The 'build it yourself' approach requires numerous integrations of underlying components not designed to work together, resulting in a degree of complexity that overwhelms even the best development teams

1. Futurism.com
2. Google Research Blog
3. Robotics-transformer2.git.io
4. C3.ai

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Potential Use Cases

Examples based on discussions with potential customers

Manufacturing

Sub Parts Assembly[1]

Structured Manufacturing Line, Task Variability

Tasks & Challenges

- Changes in production line (products, fixes, updates) come at high cost – robot retraining and manufacturing downtime

Opportunity & Expected Benefits

- Low cost/quickly able to repurpose manipulators/ robots to perform new task. Minimal production downtime for new task training
- Employee can train in and deploy models across robots quickly
- Quickly adapt to varying tasks on a multi-product assembly line set up
  - Run assembly lines with mixed products to meet demand
  - Robots automatically adapt tasks to be performed based on object detected
  - Provides flexibility & future-proof task planning; extends usability & life of robot

1. Potential use cases based on discussions with potential customers.

Kitting and Parts Sequencing

Pick/Place/Sort Parts into Assembly Kits/Containers[1]

Tasks

- Kitting and parts sequencing for complex assemblies

Challenges

- Can be difficult to automate without sophisticated planning, human intervention & high programming costs
- Variability in parts can lead to inefficiencies and errors, causing delays, rework, and increased costs
- Adapting to real-time demand changes is difficult for industries with fluctuating demand, like consumer electronics or automotive

Opportunity & Expected Benefits

- Advanced object detection, ML and AI enables robot to:
  - Achieve continuous workflow without disruptions or human intervention by dynamically adapting to unexpected events or real-time changes in kitting/sequencing orders
  - Recognize and pick/place complex parts geometries efficiently, even in variable conditions and dynamic environments
  - Quickly and accurately classify parts and determine their optimal sorting location, helping streamline production and enabling parts traceability
- Reduces overhead costs and increases throughput, providing a faster ROI

1. Potential use cases based on discussions with potential customers.

Surface Preparation

Grit Blasting, Hydro Blasting, Sanding, and Grinding

Tasks

- Removal of paint, rust, and debris from surfaces using various media blasting and grinding tools to clean and prepare surface for maintenance or finishing processes:
  - **Heavy MFG**: Prepare components, chassis, and heavy machinery for finishing processes
  - **Structural Maintenance & Repair**: Cleaning and preparing structural surfaces for paining & coating (e.g., ship hulls, tanks, bridges, and offshore structures)

Challenges

- Difficult to achieve consistent automation when surface material and conditions are highly variable
- High precision results require delicate handling or adaptability to different surface geometries - typically requires manual work or human intervention
- Manual surface preparation tasks expose human workers to high risk of injury due to hazardous materials and environments

Opportunity & Expected Benefits

- Advanced object detection, ML and AI enables robot to:
  - Manipulate blast hose and tools accurately by adapting to varying surface conditions in real-time
  - Achieve a precise and consistent result, reducing the need for re-work and human intervention
  - Learn from human-based demonstrations and data, enhancing ability to adjust to real-time situations, reducing downtime and the need for costly re-programming
  - Detect and respond quickly to potential hazards, ensuring safer operation and compliance with safety regulations
- Reduces overhead costs and increases throughput, providing a faster ROI

1. Potential use cases based on discussions with potential customers.

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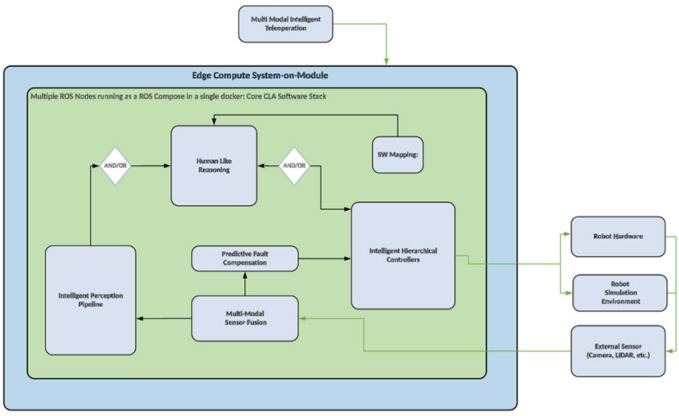
Potential Use Cases

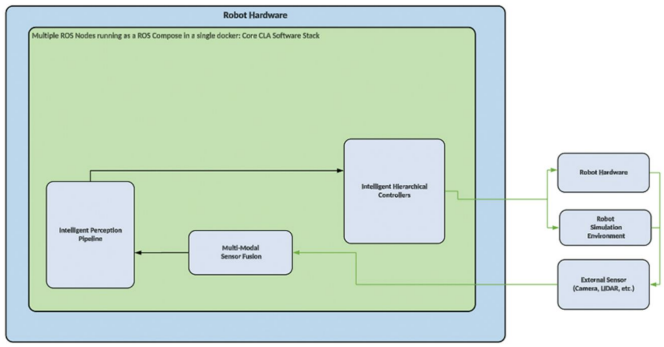
Examples based on discussions with potential customers

PALLADYNE AI PROPRIETARY

Enabling Robust Situational Awareness, Autonomous Detection/Tracking and Control of UAVs & UAGs

Leverages Foundational Capabilities of the AI/ML Software Framework





AI/ML Software Framework

(Full Stack Closed-Loop Autonomy)

Situational Awareness, Autonomous Detection/Tracking & Control[1] Framework

(Leverages a subset of the AI Software Framework)

1. Control of sensors only; does not control UAV/UGV's flight or navigational functionalities.

Defense/Commercial

Unmanned Aerial Vehicles[1]
Unstructured, In-flight

Tasks

- Persistent detection, tracking, and classification

Challenges

- Highly unstructured environment – in flight
- High levels of uncertainty

Opportunity & Expected Benefits

- Persistent sensor-based detection, tracking, and classification resolves representation uncertainty and enhances situational awareness
- Shared situation and/or navigation across UAVs enhances the collective knowledge and understanding of the entire fleet

1. Potential use cases based on discussions with potential customers.

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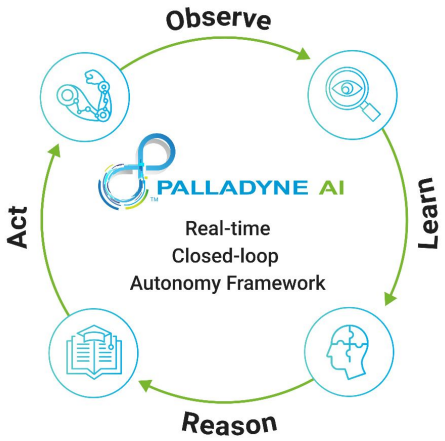
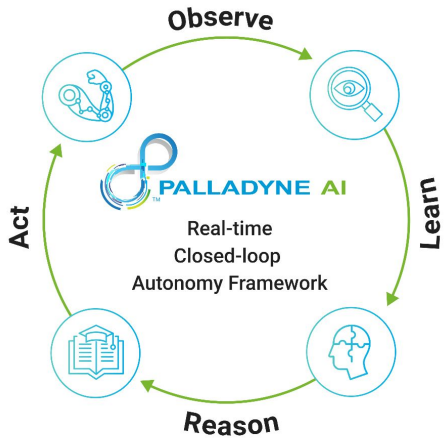
Demonstration

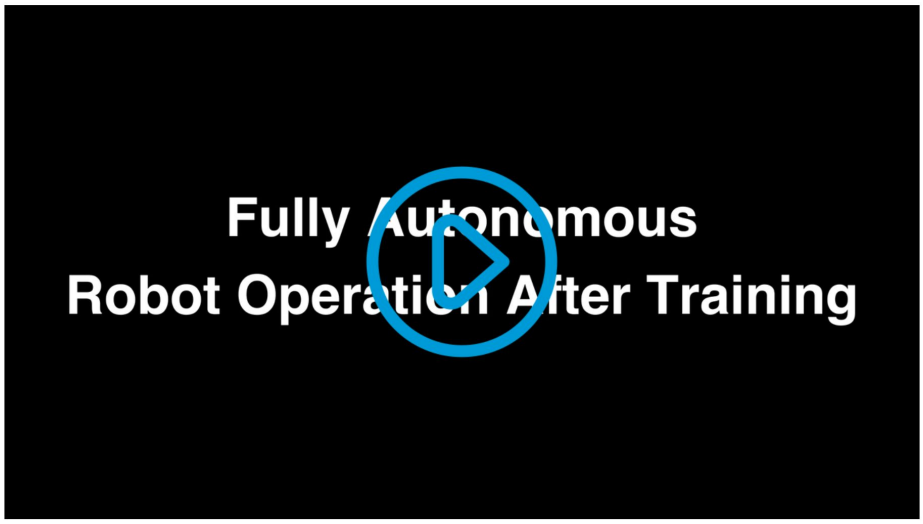
Fast Demo-Based Training

Multi-SKU Pick & Place Into Put Wall



Fully Autonomous Robot Operation After Training





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Thank You

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