IDC Ventures

# Navigating the AI Frontier

Investment Memo

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## Executive Summary

The Artificial Intelligence (AI) landscape is burgeoning with innovation, racing ahead with advancements in generative AI, Large Language Models (LLMs), and foundational AI technologies. As investors, tapping into this realm requires a judicious understanding of market dynamics, key players, and the evolving regulatory scenery. This Investment Memo looks over the AI and Machine Learning (ML) landscape, delineating some key market players, investment potentials, and the overarching trends that are shaping this domain.

## Introduction to Industry

AI has revealed a spectrum of possibilities across industries, forging solutions that were thought of only in science fiction. The rapid growth of AI, especially Generative AI and LLMs, is reshaping markets and creating novel investment frontiers.

Quick Breakthrough:

**Generative AI**
Generative AI refers to AI models that can generate new content or data that is similar to the training data they've been exposed to. For instance, they can write text, generate images, or create music based on the patterns they've learned from data. An example is Open AI's GPT-3, which can generate human-like text based on a given prompt.

**Large Language Models (LLMs)**
LLMs are a subset of AI that deals with the automatic generation of human-like text. They are trained on vast datasets to understand and generate text in a coherent and contextually relevant manner. Open AI's GPT-4 and Meta's Llama 2 are examples of LLMs.

**Autonomous Machines**
Companies in this sector are focused on creating machines capable of operating without human intervention, such as self-driving cars, drones, or robots. AI is a critical enabler of autonomy in these machines.

**AI Hardware and Semiconductors**
This includes companies that create specialized hardware for AI applications, like GPUs, TPUs, and other hardware accelerators that enable high-performance computing necessary for AI. Semiconductor companies design and manufacture the chips and processors that power AI systems. They are crucial for the development and performance of AI technologies as they provide the necessary hardware.

**AI-Enabled Software**

These companies develop software solutions that incorporate AI to enhance functionality, automate processes, or provide intelligent insights. They may span various industries and applications.

## 2023 Timeline

**Q1 2023:**

**OpenAI's Function-Calling Tools Launch:** OpenAI has launched tools that allow large language models to call functions, making AI more interactive and capable. This is a significant advancement as it enhances the way AI can interact with information and perform tasks.

**Tech Giants Testify:** CEOs from Alphabet, Microsoft, and OpenAI testify before Congress regarding AI safety, reflecting growing regulatory focus on AI.

**AI Market Growth:** The year kicks off with a projection of a 33.2% CAGR for the AI market from 2021 to 2025, emphasizing the accelerating adoption of AI technologies across industries (Cuthbertson, 2019)

**Industry Trends**: AI in healthcare continues to make strides with innovations in drug discovery and telehealth services. AI ethics debates intensify, spotlighting the need for robust regulatory frameworks (Ghaffarzadegan, Lyneis, & Richardson, 2011)

How? AI in healthcare is integrated through the applications of AI technologies like machine learning to analyze large datasets for drug discovery, or to power telehealth platforms for remote consultations, the more autonomous, the faster the speed to analyze bigger sets of data with more accurate testing.

**Company Highlight:** Symbotic sees a 116% valuation multiple improvement, indicating a strong market response to its AI-driven solutions (Statista, 2021)

### Key M&A

On January 24, 2023, Jasper acquired Outwrite, stepping further into the generative AI domain by expanding into a content suite that enriches writing with AI suggestions on grammar, tone, and brevity. This acquisition, leveraging Outwrite's established user base of over 1 million, marks a strategic move towards direct-to-consumer AI services, hinting at a response to the rising demand spurred by ChatGPT. The browser-native facet of Outwrite's product facilitates smoother integration into user workflows, so to Microsoft Bing's Edge browser integration, reflecting a proactive step in a rapidly evolving AI sector. (Entrepreneur, 2021)

Jasper: Jasper, formerly known as Conversion AI, is a company that develops an AI-based content writing platform aimed at aiding businesses through creative blocks to generate original content. Founded in 2020, it offers a product suite that includes art creation, copywriting, project, and team management features, along with training and marketing strategy guides for users.

Outwrite:
AI Tech startup founded in 2015 with the mission to help individuals become powerful writers. It offers a technology tool designed to improve sentence clarity and conciseness, functioning more than just a grammar checker by turning ideas into powerful sentences. Outwrite's product suite includes features for passive voice detection, plagiarism checking, and sentence paraphrasing, catering to both individual and business users.

January 10, 2023, Insider acquired MindBehind, embracing its AI chatbot technology that transforms social platforms into virtual assistants. This acquisition underscores the growing importance of conversational AI in e-commerce, with a nod to the potential of text-based marketing propelled by authentic chatbots, exemplifying how up-to-date AI techniques like ChatGPT integration can carve competitive edges in the market. (Entrepreneur, 2021)

Insider:
Insider is a tech company offering a customer data platform with services like customer segmentation and personalization, aimed at enhancing digital marketing efforts across various industries.

MindBehind:
MindBehind is a Turkey-based business messaging platform that connects customers to virtual assistants or live agents, employing AI technology to offer interactive conversational solutions for various sectors including retail and finance.

**Q2 2023:**

**Investment Surge:** VC activity rebounds with $19.4 billion invested in AI and ML, reflecting growing investor confidence.

**Meta**
With the launch of Llama 2, an open-source language model, Meta is contributing to the growing repository of LLMs, enhancing capabilities in question answering and customizable base models for researchers (PitchBook, Q2 2023).

**Major Acquisitions:** Snowflake and Databricks make significant acquisitions in the generative AI sector, indicating a trend towards consolidation.

**Generative AI:** The spotlight is on generative AI, driving high valuations for companies building infrastructure for this technology. Pure-play AI companies earn the highest median revenue multiples among all AI segments (Statista, 2021)

**AI in Semiconductor Industry:** Increased deployment of data center accelerators boosts revenue growth predictions, reflecting the relationship between AI and semiconductors (Statista, 2021)

**Q3 2023:**

**Rapid Valuation Increases:** Companies building infrastructure for generative AI see rapid valuation increases, indicating strong market optimism.

**Generative AI Hype Diminishes:** Despite initial bumps in share prices, the hype around generative AI doesn't prove resilient as not all new products translate into high revenue guidance for the following year (Statista, 2021)

## Market Opportunity

**Global Market Growth**

Reports vary their market size, but out of many sources, they all point to a substantial increase.

**AI Market Growth:** The AI market is projected to continue its growth, potentially reaching **$554.3 billion by 2025** as per Forbes.

Lablab.ai estimates the global AI market to reach **USD 196.6 billion by 2023**, and then **more** than **half a trillion U.S. dollars by 2023,** driven by digital transformation and vast data generation in Information Technologies (IT) and telecom industries (Gorban, Tyukin, Prokhorov, & Sofeikov, 2016)
Imarc Group on the other hand suggests that the market will expand at a **CAGR of 29.9% from 2023 to 2028, reaching USD 350.4 billion by 2028**, propelled by the adoption of cloud-based solutions and the rise of autonomous vehicles (Singh, 2020)

**Global Market Size:** The global AI market size was valued at **USD 150.2 billion in 2023** and is projected to exhibit a high growth rate, reaching **$1,345.2 billion by 2030**.

**Spending:** Worldwide spending by governments and businesses on AI technology is expected to exceed **$500 billion in 2023**

## Revenue Trajectories

**Generative AI**
Companies embedded in generative AI infrastructure have seen a swift escalation in valuations, notably **pure-play AI** core companies, which are topping the charts with the highest median revenue multiples among all AI segments (PitchBook, Q3 2023)

Pure-Play AI:
These companies are primarily focused on AI technology, offering products, services, or platforms that are central to AI development and deployment. They're dedicated to advancing AI technology and its applications.

A significant 64% of businesses believe that AI will help increase their overall productivity, portraying a growing confidence in AI's potential to transform business operations (TechJury, n.d.)

Also gaining traction, with over 80% of enterprises anticipated to have used Generative AI by 2026, up from less than 5% in 2023 (Marr, 2020)

The AI-powered voice search is becoming a part of daily life, with 50% of U.S. mobile users utilizing it daily, signifying the growing influence of AI in everyday consumer behavior (TechJury, n.d.)

AI Core – Pure Play Enterprise Value (EV) / Revenue Multiples:

| | *23E* | *24E* | *25E* |
|---|---|---|---|
| *Mean* | 9.2X | 7.4X | 6.1X |
| *Median* | 8.1X | 6.8X | 5.7X |

(PitchBook, Q3 2023)

**Semiconductors and Automated Machines**
A change in revenue growth is forecasted across AI segments in 2023, with a sharper uptick anticipated in 2024, particularly within semiconductors and autonomous machines sectors (PitchBook, Q3 2023).

Companies like NVIDIA are carving a niche with high-growth projections based on AI adoption and sales pipelines, rendering this sector a lucrative investment avenue (PitchBook, Q3 2023).

The revenue growth is expected to accelerate in 2024, especially in semiconductors and autonomous machines sectors due to improved deployment of data center accelerators and autonomous vehicles (PitchBook, Q3 2023).

AI Semiconductors Enterprise Value (EV) / Revenue Multiples

| | *23E* | *24E* | *25E* |
|---|---|---|---|
| *Mean* | 10.4X | 8.2X | 6.7X |
| *Median* | 6.6X | 7.2X | 6.2X |

**AI Legal Tech**

The legal sector is ripe for disruption with AI, where firms like EvenUp are leveraging AI to enhance legal case preparations. AI in legal tech is burgeoning, making it an enticing investment domain (PitchBook, Q2 2023).

## Key Big Players and Innovators

**Scale AI**

Valuation: $7.3 Billion
Last Series: series E - $325 Million
Total Raised: $602.86 Million

Scale AI, started in 2016, creates a one-stop platform that helps manage everything needed to build machine learning systems. Their platform specializes in developing complex datasets to accelerate the development of artificial intelligence (AI) applications through ground truth data. They are now a key player in this field, mainly helping to check and label data to make it useful for learning. They work with different kinds of businesses, like self-driving cars, drones, and robotics, making them smarter by providing the right kind of data.

Their platform integrates advanced data annotation tools with a global workforce and robust project management capabilities, providing a comprehensive solution that's trusted by world-class companies (TechTarget, n.d.)

Scale AI serves a diverse range of industries including automotive, retail, telecommunication, healthcare, and financial services. Their primary customers are businesses requiring accurate data labeling for effective AI systems deployment, indicating a strong market demand for their services (ZDNet, n.d.).

It is building strong partnerships with significant players in the tech industry like Waymo, Lyft, and Airbnb, enhancing its reputation and market reach (ZDNet, n.d.)

Continuous expansion of services and attracting new clients as the demand for AI solutions grows, alongside entering new industries such as healthcare, retail, and finance.

Revenue generation through subscription-based pricing models and custom solutions, charging clients based on data volume, complexity, and turnaround time.

**Databricks**

Valuation: $38.0 billion
Last Series: series H - $1.6 billion
Total Raised: $3.5 billion

Databricks is a company started in 2013 that quickly became known for its strong tools in the areas of artificial intelligence (AI) and data science. Initially, it was built on a freely available technology called Apache Spark, but later shifted to a closed, proprietary model, which helped increase its earnings since 2016. The core product from Databricks helps businesses organize their data and make it ready for complex computing tasks.

One of the highlighted features is its support for working on machine learning models through an interactive notebook format and having a central place to store diverse data for detailed analysis. Databricks also created its own advanced AI tool called Dolly, which is good at answering questions and has become popular among developers, as shown by its 10,000 stars on GitHub.

To keep growing and improving its services, Databricks has bought other companies. For example, it acquired Rubicon for better data storage, MosaicML for $1.3 billion to speed up data processing, and Okera for improved data governance. These purchases show Databricks' proactive efforts to boost its data management and processing capabilities, strengthening its standing in the AI industry.

**DataRobot**

Valuation: $6.3 billion
Last Series: series G - $300 million
Total Raised: $1.1 billion

Founded in 2012, has developed an Enterprise AI platform providing automated machine learning (autoML) tools. This platform simplifies data preparation, model development, and security for a wide range of users including data scientists and business executives. Through strategic acquisitions, DataRobot has enhanced its platform to stay competitive, particularly

against big tech firms known as hyperscalers (large tech companies that have the infrastructure to operate and manage computing resources in the cloud environments)

DataRobot recently unveiled a new AI platform, integrating with Microsoft Azure OpenAI service for improved data science code generation. This move, along with more integrations with Snowflake (similar to Databricks) for data preparation, signifies DataRobot's continuous effort to improve data analysis capabilities.

DataRobot stands out in the autoML market for its flexible and user-friendly platform, which is more customizable compared to solutions from larger competitors like Microsoft and Google.

## 2023 Pitchbook Mentions (Public)

**Symbotic**
Market Cap: $3.74 Billion +403%YoY
TTM Total Revenue: $1 .03 Billion
Enterprise Value: $3.25 Billion
+715.88%YoY

Symbotic Inc., initially known as CasePick Systems, is an automation technology company established in 2007. It specializes in developing, commercializing, and deploying end-to-end technology solutions aimed at enhancing supply chain operations. Symbotic primarily focuses on artificial intelligence (AI)-enabled robotics automation technology, which significantly improves efficiency in modern warehouses and distribution centers. Their innovative solutions cater to some of the world's notable retail and wholesale companies, generating key revenue from the United States while also operating in Canada. Symbotic's automation technology significantly enhances operating efficiencies, making product distribution in large warehouses or distribution centers seamless and more efficient.

Symbotic improved by 116% in Q3 23, showcasing responses to generative AI integration. (Intel, n.d.)

**C3.ai**

Market Cap: $3.11 Billion +132.98%YoY
TTM Total Revenue: $273.85 Million
Enterprise Value: $2.36 Billion +449.22%YoY

C3.ai Inc. is an enterprise artificial intelligence (AI) company that provides software-as-a-service (SaaS) applications, facilitating the rapid development, deployment, and operation of large-scale Enterprise AI applications across various infrastructures. The company operates under three main divisions:

C3 AI Suite: A comprehensive application development and runtime environment designed for rapid design, development, and deployment of Enterprise AI applications.
C3 AI Applications: A growing family of industry-specific and application-specific turnkey AI solutions that are ready for immediate installation and deployment.
C3.ai Ex Machina: Analytics for applying data science to everyday business decisions.

The valuation multiple of C3.ai improved by 87% in Q3 23, showcasing responses to generative AI integration

## Tracking Companies (Santi)

**INTRO**
Looking into a perspective for potentials of AI and machine learning in propelling groundbreaking advancements across various sectors, a thoughtful consideration was conducted to identify companies operating within the domain of AI and machine learning integration. This analysis was filtered to spotlight companies at the Series A+ stage that have amassed a funding of around $50M+ in the sector, with an inception date from 2017 onwards. This refined focus was engineered to pinpoint enterprises that have notably outstanded investors' enthusiasm and exhibited a fast-paced growth trajectory.

**Biotechnology**

**Atomic AI**

Post Valuation: $125 Million
Last Series: series A- $35 Million (2023)
Total Raised: $42 Million
Valuation Step-Up: 3.43X
(Seed Round – Early Stage VC)

**Key Terms:**

**RNA Structures:** RNA, which stands for Ribonucleic Acid, is a molecule similar to DNA. It carries information from DNA to other parts of the cell to help produce proteins, which are crucial for many functions in the body. RNA structures refer to the shapes and formations RNA molecules take, which play a role in their function.

**Human Transcriptone:** The Human Transcriptome, on the other hand, refers to all the RNA molecules present in a human cell at a particular time. It's like a snapshot of what's happening in the cell in terms of RNA activity, which helps scientists understand how genes are being expressed and how the body is functioning at a molecular level.

Atomic AI is a company that uses advanced computer technology, like artificial intelligence (AI) and machine learning, alongside biotechnology to create a special platform. This platform helps in designing new molecules and medicines in a smart way. Usually, when trying to find new medicines, researchers focus on studying disease-causing proteins. But Atomic AI does something different. It looks at RNA structures, which are like the blueprints used to make these proteins. By doing this, Atomic AI hopes to find new ways of treating or curing diseases that were previously very hard to tackle with medicines because the proteins they aimed at were too tricky to work with.

The technology underpinning Atomic AI's bold venture was initially conceived at Stanford, and it ingeniously melds artificial intelligence analysis with wet lab experiments. This collaborative endeavor aims at discovering small molecules capable of drugging RNA, thereby unlocking new dimensions of drug discovery and treatment modalities. The unique methodology employed by Atomic AI involves a meticulous mapping of the human transcriptome, which is a comprehensive compilation of all RNA. This is achieved through a mixed blend of wet lab experiments and computational analysis, where data generated from the wet labs are utilized to train the AI to unearth novel targets on the three-dimensional structure of RNA. This iterative process engenders a virtuous cycle where AI predictions inform additional wet lab experiments, whose results, in turn, feed further AI analysis (MedCity News, 2023)

By targeting RNA instead of proteins, Atomic AI is not only expanding the horizons of treatable diseases but is also pioneering a novel pathway that holds the promise of significantly accelerating the pace of drug discovery and development.

**Generative AI Synthetic Data**
**Computer Vision**

**datagen**

Post Valuation: $40.85 Million
Last Series: series B- $50 Million (Mar-2022)
Total Raised: $68.5 Million
Valuation Step-Up: 2.82X
(Seed Round – Early Stage VC (series A) )

**Key Terms:**
**Simulated Data Technology:** Technology that creates artificial or synthetic data that mimics real data, used for testing, training, and validating machine learning models, especially when real data is scarce or sensitive.

**Hyper-Photorealistic Imagery:** Extremely realistic digital images or videos that are almost indistinguishable from real-life visuals. This technology is often used in computer vision and other AI applications to create realistic training data.

DataGen, is a firm in the realm of simulated data technology. Established in 2018, the company has crafted a niche for itself by developing a technology that is not only scalable and bias-free but also automatically annotated. This technology employs hyper-photorealistic imagery and algorithms to engender high-variance datasets, meeting the bespoke needs of their clientele by providing them with the ability to stimulate large-scale data as required (Pitchbook).

Example:

Creating Fake but Realistic Data:
Imagine you are developing a new photo recognition app that can identify different breeds of dogs. To train your app, you need lots of pictures of different dog breeds. However, gathering real photos can be time-consuming and expensive. DataGen could create a bunch of realistic-looking images of various dog breeds to help you train your app.

Bias-Free:
It's important that your app can identify all breeds of dogs accurately, not just the common ones. DataGen ensures their fake data doesn't favor any particular group, so the data would include a wide variety of dog breeds, not just the most popular ones.

A dive into DataGen's financial journey reveals a Series B venture funding round concluded on March 23, 2022, where it secured a substantial $50 million. This round was spearheaded by Scale Venture Partners, with notable participation from Viola Growth among others. The funds were earmarked to reinforce DataGen's vanguard position in the burgeoning computer vision space, indicating a strategic intent to capitalize on the emerging market opportunities (Pitchbook).

**Generative AI Urban Planning Tech**

**Replica**

Post Valuation: $296 Million
Last Series: series B- $41 Million (April-2021)
Total Raised: $56.5 Million
Valuation Step-Up: 5.8X
(Series A– Series B )

REPLICA

**Key Terms:**
**Synthetic Population**: A simulated population created from various data sources to understand and analyze human behavior and movements within urban areas.

**Disaggregated Data**: Data that is broken down into smaller units, providing more detailed information which is crucial for accurate analysis and forecasting.

Replica, initially spun out from Sidewalk Labs (a smart city firm owned by Alphabet), has developed an innovative urban planning tool aimed at transforming transportation planning and city design development (Startland News, 2019) With a focus on generating a synthetic population, Replica's tool amalgamates various data sources including mobile phone applications and public demographic data along with public transit information. This integration facilitates a holistic understanding of how people move within urban locales, which in turn, empowers city planners to make well-informed decisions regarding infrastructure, encompassing transport systems, schools, parks, hospitals, and more.

The tool employs hyper-photorealistic imagery and algorithms to provide a user-friendly modeling interface that utilizes anonymized mobile location data. This helps in painting a comprehensive picture of how, when, and why people travel in urban areas, making it a crucial asset for planning agencies (Bowden, 2018)

**Biotechnology**

**LatchBio (UC Berkeley Alumni – CEO Alfredo Andere is from Mexico, close reach)**

Post Valuation: $150 Million
Last Series: series A- $28 Million (June-2022)
Total Raised: $32.8 Million
Valuation Step-Up: 4.94X
(Seed Round – Early Stage VC (series A) )

**Key Terms:**
**Amazon S3:** Amazon Simple Storage Service (Amazon S3) is a service offered by Amazon Web Services (AWS) that provides object storage through a web service interface. It's designed to store and retrieve any amount of data from anywhere on the web.

**Benching:** In the context of biotechnology and laboratories, benching often refers to bench-scale experiments or tests conducted at a smaller scale. These are typically performed on a lab bench or workstation, hence the term 'benching'

**Base space:** BaseSpace is a product offered by Illumina, a company known for its DNA sequencing and array-based technologies. BaseSpace Sequence Hub is a cloud-based platform that allows for genomic data storage, analysis, and sharing in a secure and scalable environment. This platform helps researchers and clinicians process and make sense of genomic data, which can be extremely valuable in the biotech and medical fields.

LatchBio, Inc. is a relatively new player in the biotech sector, having been established in 2021. The company offers a bioinformatics platform primarily aimed at startups involved in cell and gene therapy domains. Its platform is missioned to bring modern cloud computing technologies into biotech labs and startups, providing a seamless environment for hosting, presenting custom workflows, pipelines, and machine learning (ML) models. This innovative platform allows integration with data from Amazon S3, benching, and base space, which helps in facilitating a smooth computational experience in the cloud. A notable feature of LatchBio's platform is its user-friendly interface that enables scientists to create bioinformatic queries without requiring command-line expertise, which is often seen as a barrier in utilizing computational resources efficiently. By eliminating setup hurdles and the necessity for expensive systems, LatchBio enables more accessible computation in the cloud for its users.

LatchBio's venture into providing cloud-based bioinformatics solutions addresses a significant need in the biotech sector, especially for emerging cell and gene therapy startups. By offering a platform that simplifies bioinformatic queries and cloud computation, LatchBio is not only breaking down technical barriers but also accelerating the pace at which biotech startups can conduct vital research and development activities.
(Bowden, 2018)
(Chudleigh, 2022)

## Quick Macro perspective

- Despite concerns of job displacement due to AI, it's estimated that AI could create around 97 million new jobs, mitigating workforce displacement concerns (Forbes,2023)
- Over 75% of consumers are concerned about misinformation from AI, signaling the ethical considerations that come with AI adoption (Forbes,2023)
- Hype vs Reality: The initial enthusiasm surrounding generative AI has seen a dip, reflecting a need for a more grounded assessment of AI product capabilities and market readiness (PitchBook, Q3 2023).
- **Regulatory Oversight:** With OpenAI dedicating resources to control AI models, the regulatory framework is bound to tighten, which could impact AI firms' operational paradigms (PitchBook, Q2 2023).
- The regulatory landscape is evolving with OpenAI dedicating resources to control AI models, indicating a shift towards more oversight and ethical AI practices. Regulatory changes could affect companies' operational paradigms and investment prospects (PitchBook, Q2 2023).

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