



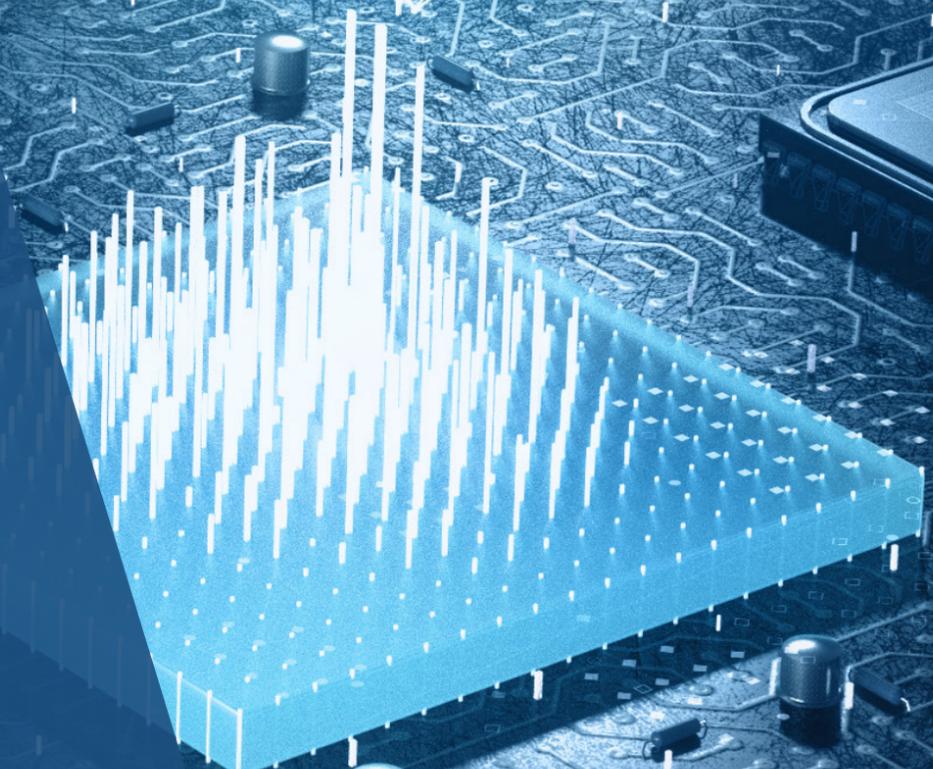
EMERGING TECH RESEARCH

Artificial Intelligence/ Machine Learning

1Q 2019

Report preview

Contact your PitchBook customer success manager or visit our Research Center to purchase a full report.





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REPORT PREVIEW

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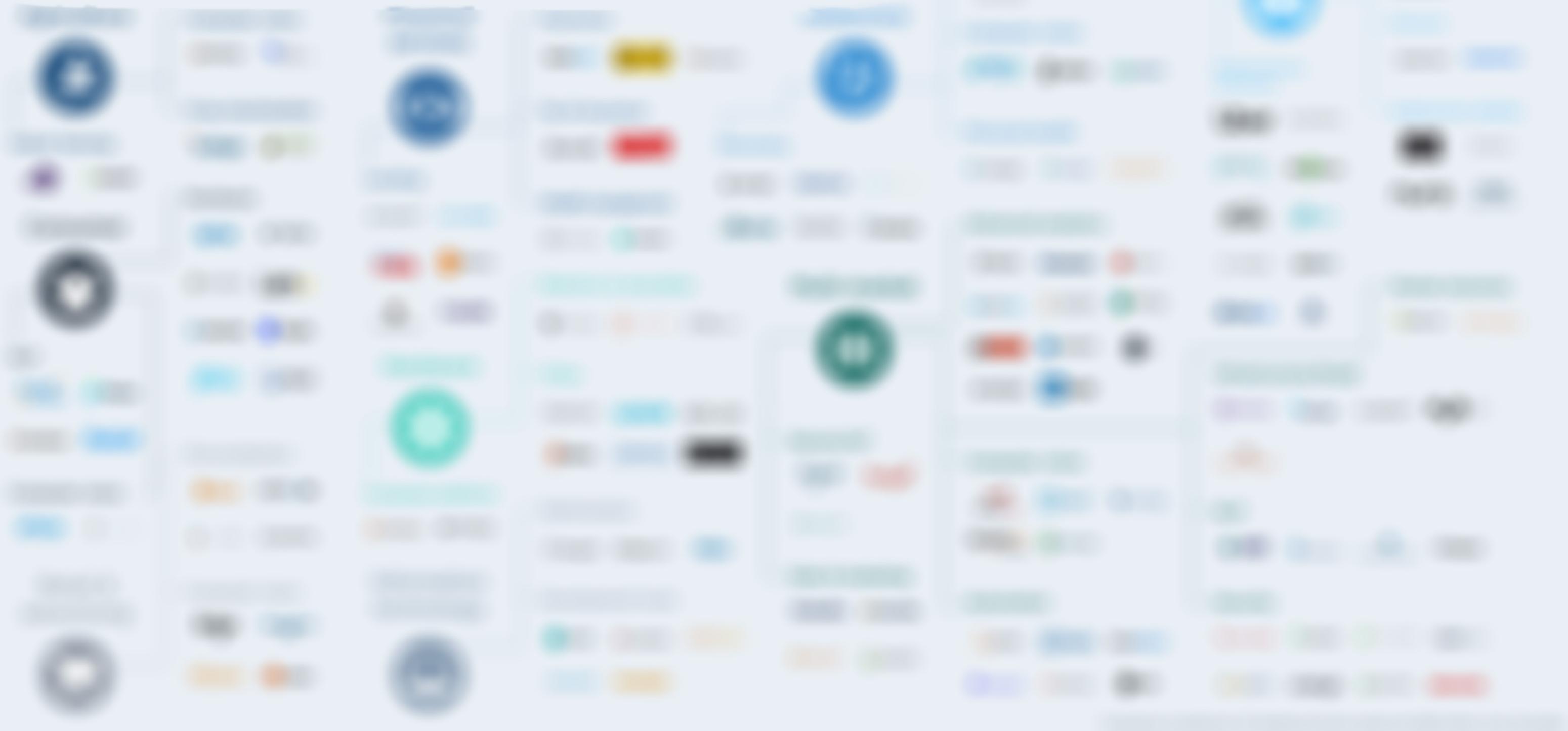
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AI/Machine Learning Market Map

REPORT PREVIEW





Key Investors

REPORT PREVIEW

INVESTOR	PORTFOLIO COMPANIES					INVESTOR	PORTFOLIO COMPANIES				
						ANDRESSEN HOROWITZ					
khosla ventures				AYASDI							
					AME CLOUD VENTURES						
Accel						Data Collective					
					KLEINER PERKINS						



Overview

Artificial intelligence (AI) is the area of computer science that focuses on the creation of an intelligent machine that can perceive its environment and make decisions to maximize the chances of reaching its goal. Machine learning (ML) is a subfield of AI that aims to give computers the ability to learn iteratively, improve predictive models and find insights from data without being explicitly programmed.

We view AI/ML as an important tool in the technology arsenal for enterprises. Similar to the present use and ubiquity of the internet, we see opportunity for AI/ML technology to command comparable importance in transforming the way business is done. This level of potential translates into an exceedingly large total addressable market, which we view as one of the most attractive qualities of the space from an investment perspective.

The cost-saving qualities of AI/ML applications incentivize implementation. By utilizing internal company data with AI/ML, businesses can automate and optimize processes within the sales, marketing, customer service, HR functions and beyond. This allows employees to be more productive and focus on higher-level tasks that drive more value for the business, while eliminating unnecessary costs. While a few early adopters have developed deep AI/ML capabilities in-house, there is still a great deal of untapped potential for enterprise adoption, especially for companies outside of the technology industry.

We believe that as AI/ML technology becomes more pervasive, some functionalities will likely become commoditized. AI-as-a-service has already started to be rolled out through the major cloud platforms (AWS, Google Cloud, etc.), and as computing costs diminish, we expect it will become easier and easier for companies and individuals to explore and implement AI/ML technology. While this is likely to drive more demand across the industry, it could pressure those providers that offer more commoditized AI/ML applications.



SEGMENT DEEP DIVE

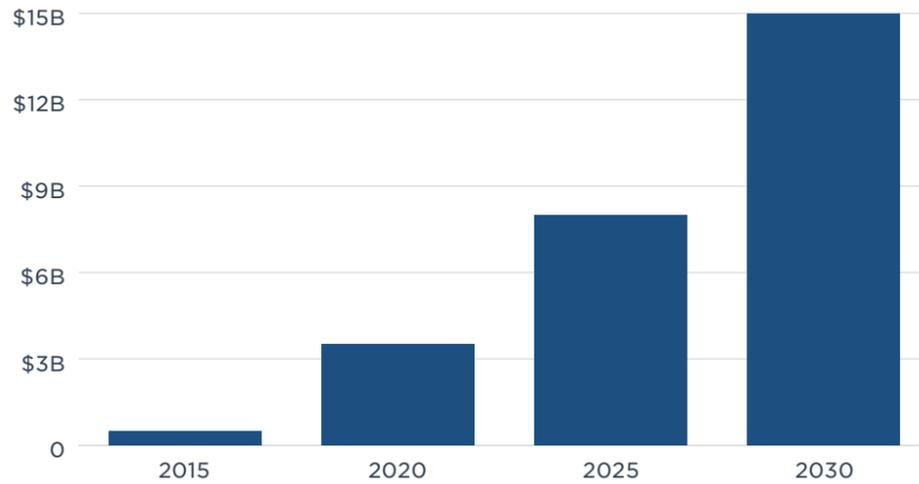
Transportation



TRANSPORTATION

REPORT PREVIEW

MARKET SIZE



Source: Roland Berger and Pitchbook estimates. Represents estimated autonomous vehicle software revenue

APPLICATIONS

Attractive characteristics of businesses in the space include large and expanding TAM, limited variable costs, disruption potential and recurring nature of transportation services.

Companies in the space generate revenue by selling or licensing software and/or vehicles.

Three primary AI applications in our dataset:

- Computer Vision
- Reinforcement learning
- Information Analysis & Learning

INDUSTRY DRIVERS

- Continued investment in autonomous and semi-autonomous vehicles.
- Fleet management and planning for consumer and commercial applications
- Potential cost efficiencies for ridehailing and commercial transportation

KEY PROVIDERS



NOTABLE DEALS



November 2017
\$450M M&A
Acquired by:
DELPHI



February 2019
\$530M Series B

KPIS

- Autonomous miles driven
- Number of interventions per 1,000 miles
- Number of emergency decelerations per 1,000 miles
- Duration of transfer of control between driver and vehicle
- Vehicle down-time (mechanical/sensor repairs, or ridehailing occupancy)
- Fleet size
- Number of Patents

SEGMENT DEEP DIVE

Healthcare



Overview

We see potential healthcare use cases for nearly all the building blocks of AI/ML, from patient care to administration. With healthcare costs representing roughly 18% of US GDP, it is not surprising that this market attracts considerable investor interest.

We believe widespread data digitization in healthcare provides a favorable backdrop for expanding implementations of AI/ML, which can drive quicker, more accurate patient recommendations and help hospital run processes more efficiently. Biotechnology and other genome sciences also stand to benefit from the ability to process larger amounts of data and derive new insights.

Computer vision applications are also being adopted for detecting and diagnosing skin cancer, pneumonia, lung sarcoidosis, TB, certain early-stage cancers and more. Implementing these technologies at the clinic-level represents an opportunity to improve patient outcomes while also increasing the ability to see more patients.

However, disparate and unstructured data can be problematic and we believe most AI/ML use cases achieving commercial success rely on vast, cleanly labeled datasets. Over time, we expect healthcare data will become more standardized and accessible, and note companies like Innovaccer focus on aggregating disparate data sources held in silos both inside organizations or between different parties.

Regulatory and institutional barriers also present headwinds to data access. However, we believe that as individuals and healthcare operators begin to see the benefits of utilizing AI/ML, and data security tools gradually catch up the needs of AI, these datasets should become more widely available.

SEGMENT DEEP DIVE

Agriculture



Outlook

AI to help maximize food production: We expect AI/ML technologies will prove critical in helping the agriculture industry improve yield and this will support strong demand trends related products and services. Vendor lock-in will be a key determiner of success for providers, as installed software will likely be very sticky, providing opportunities to cross-sell and grow the category.

Proliferation of computer vision applications should continue: We expect computer vision software may see early success in the agriculture market, with use cases ranging from satellite and drone imaging to individual fruit assessment. As general image recognition algorithms are improving to superhuman levels, entrepreneurs are already able to leverage and customize these applications for agricultural purposes and drive improved results.

Proliferation of connected devices to catalyze adoption: The falling cost of sensors will lead to further penetration of IoT applications in agriculture, as more sensors will enable the supply and processing of larger and more robust streams of data to machine learning algorithms. We believe applications for connected devices could be critical to the development for soil and crop health analysis, determining water needs, soil deficiencies, ideal temperature and other variables that help optimize crop yield.

About PitchBook Emerging Tech Research

Independent, objective and timely market intel

As the private markets continue to grow in complexity and competition, it's essential for investors to understand the industries, sectors and companies driving the asset class.

Our Emerging Tech Research provides detailed analysis of nascent tech sectors so you can better navigate the changing markets you operate in—and pursue new opportunities with confidence.

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