

## Industry Classification for Artificial Intelligence

Version 3 . 0 Dated 30 April 2019

This Industry Classification for Robotics and Automation companies is used to support the ROBO Global Artificial Intelligence Index Series. THNQ seeks to capture the growth and returns opportunity presented by the advent of artificial intelligence.

**ROBO Global<sup>®</sup> Database** - ROBO Global created and maintains a unique database of companies across the globe that have a portion of their business and revenue associated with Artificial Intelligence and enabling technologies. Our database has well over a decade of history and captures the entire value chain of end-user solutions, products, and key enabling technologies. At ROBO Global, our exclusive focus, combined with our access to a unique coverage team of disruptive technology industry experts and financial professionals, allows us to identify, research, and often meet with potential database members.

**ROBO Global Industry Classification** - In the absence of a benchmark industry classification system for identifying companies engaged in the global Artificial Intelligence industry, in 2013 we created the ROBO Global Industry Classification. Designed for the investment and research community, the Industry Classification currently identifies 11 subsectors of the Artificial Intelligence theme that present a suitable level of product and technology maturity to carry high growth and returns potential. Insights from our Strategic Advisory Board have confirmed that each of these 11 subsectors is positioned well to evolve and expand to support the growth of the global Artificial Intelligence industry.

The ROBO Global Industry Classification is maintained by the ROBO Global Industry Classification Committee, which convenes at least once each quarter and engages in regular dialogue with the ROBO Global Strategic Advisory Board.

Please visit [www.roboglobal.com/about-us/](http://www.roboglobal.com/about-us/) for further information.

## Membership Qualification

To qualify for membership in the ROBO Global Industry Classification, companies must pass through the following multi-step screening process:

1. Companies must be included in the ROBO Global Database.
2. All non-publicly traded companies are excluded.
3. If a company's product, technology, services, or business model do not fit into one of the identified subsectors, then they are excluded. Each of the subsectors is discussed later in this document.
4. Companies are given a "THNQ Score," comprised of factors representing the levels of revenue the company receives from Artificial Intelligence activities, levels of investment the firm makes in Artificial Intelligence, and the market and technology leadership of the firm in the Artificial Intelligence universe. Each stock's "THNQ Score" will range from 1 to 100 and will be reviewed on a regular basis. Companies whose "THNQ Score" is greater than or equal to 50, and who meet all other eligibility requirements, are eligible for inclusion in the ROBO Global Artificial intelligence Industry Classification.
5. Companies that do not pass the ROBO Global ESG Policy are excluded. For full details of our ESG Policy please contact [info@roboglobal.com](mailto:info@roboglobal.com) or visit [www.roboglobal.com/esg-policy/](http://www.roboglobal.com/esg-policy/).

Eligible companies seeking inclusion in the ROBO Global Industry Classification System or that seek to be classified in a different subsector should apply in writing to [info@roboglobal.com](mailto:info@roboglobal.com).

## Subsector Descriptions:

**Business Process** - AI powered tools help organizations analyze and leverage massive amounts of data to better understand customer behavior, detect fraud, streamline supply chains, and refine internal efficiencies. AI's ability to transform business models seems nearly endless, and innovations in machine learning, data analytics, and automation are enabling companies to re-imagine traditional workflows and target new market opportunities.

**Consulting Services** - Understanding how to apply leading-edge technology and intelligent product design to support existing business structures is vital to achieving optimal benefits from AI. When companies lack internal AI expertise, AI consulting firms provide knowledge and insights to create effective AI strategies, evaluate AI technologies, and deliver integration services to support the full applications lifecycle and drive greater efficiencies, cut costs, and increase operating margins.

**Big Data/Analytics** - Predictive analytics, predictive maintenance, data aggregation, and data analysis are among the AI technologies that give companies the power to analyze and predict outcomes. This level of deep, AI-driven analysis informs better marketing, sales, and business decisions. The result: actionable, predictive insights that help companies improve customer experiences, deliver more targeted offerings, and solve complex business challenges.

**Cloud Providers** - Public and private cloud platforms are the key to storing and sharing the massive amounts of data required to feed AI processes, and to delivering the standardization required for AI automation. By increasing the speed of innovation, rapidly delivering new services, and supporting the latest advancements in AI, cloud providers help companies accelerate the delivery lifecycle and rapidly evolve and improve products and services.

**Network Security** - AI-driven behavioral analytics use the power of machine learning to model network behavior and improve threat detection. AI's storage capacity, processing power, and advanced analytics give companies the ability to sort through vast quantities of software vulnerabilities, configuration errors, and threat intelligence to isolate high-risk situations that call for immediate attention—all in near-real-time.

**Cognitive Computing** - Cognitive computing provides a higher level of human-like problem solving by using computer-based neural networks to process information, and by giving computers the ability to think, reason, and remember—all without human intervention. Solutions that offer these advanced deep-learning algorithms are driving unprecedented developments in medicine, education, agriculture, and more.

**eCommerce** - eCommerce leverages the power of AI to better understand customers, generate new leads, and improve customer engagement. New advancements in natural language processing and image recognition are being used to deliver highly personalized search results, create more efficient sales and lead generation, and streamline global commerce.

**Healthcare** - AI is powering innovations in the diagnosis and treatment of diseases, as well as patient care and healthcare productivity. AI-enabled surgical robotics, medical imaging technologies that use AI to scan vast databases of patient records to analyze and diagnose disease, genomic sequencing, and other major innovations are driving more precise diagnosis and

advanced treatments that drastically improve patient outcomes.

**Factory Automation** - Industrial automation remains a hotbed for AI as factories go digital. Machine learning and predictive maintenance increase factory and supply chain efficiencies, shorten time to market, and improve safety. Sensing and advanced computer vision technologies using AI enable greater efficiency gains in logistics.

**Semiconductor** - The exploding use of AI is ushering in a new era of semiconductor architectures and computing platforms that can handle the accelerated processing requirements of an AI-driven world. To tackle the challenge, semiconductor companies are creating new, more advanced AI chip engines using a whole new range of materials, equipment, and design methodologies.

**Consumer** - AI is continuing to reshape the consumer experience. Building on key capabilities that have already transformed the gaming and entertainment industries, AI is now delivering smart homes, changing when and how we shop by driving deeper levels of personalization, and applying immersive computing that puts the power of augmented reality to work to facilitate the purchases of apparel, travel, real estate and more.