

# INVESTING IN THE ROBOTICS, AUTOMATION & AI REVOLUTION

## ROBOTICS, AUTOMATION, AND ARTIFICIAL INTELLIGENCE (RAAI) IS DISRUPTING OUR WORLD. INVESTORS, IT'S TIME TO PAY ATTENTION.

Automation is nothing new. Humans have been automating our dull, dirty, and dangerous work for decades—from the earliest agricultural machinery to today's high-speed welding robots used in manufacturing. But with machine intelligence hitting an inflection point in recent years, we appear to be on the cusp of a massive, exponential wave of change that may be even more transformative to our society than personal computers, the Internet, and mobile devices have been over the past twenty years.

Importantly, this technological revolution is still in its infancy, and the ingredients for a major breakthrough are in place:

- Costs are rapidly declining across key enabling technologies such as computing, sensing, and communication.
- Performance capabilities of RAAI are quickly expanding its reach into nearly every industry.
- Data—the fuel of artificial intelligence—is growing every day. In 2018, over 2.5 quintillion bytes of data were sent daily, according to cloud-based operating system DOMO.<sup>1</sup>

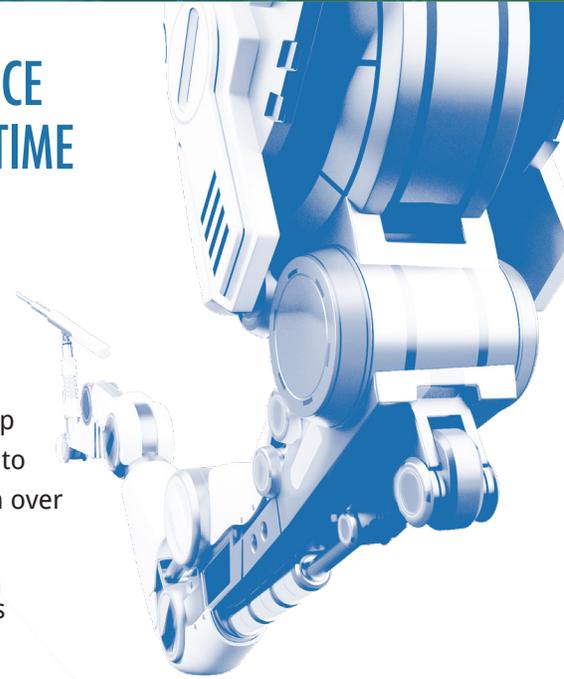
Robotics and AI are already an integral part of our lives. Last year, Amazon delivered over 5 billion items in two days or less<sup>2</sup> to their Prime members—an accomplishment that would not have been possible without the advanced capabilities of robotics-driven factory automation and AI. Last year, nearly 5,000 da Vinci surgical robots in hospitals around the world helped perform 1 million operations<sup>3</sup>. Every day, Siri and Alexa help us transcribe voicemails to text, pick the perfect music playlist, discover the perfect dinner destination, and even help us to avoid traffic to get there right on time. Just as the Internet transformed how we work and communicate, robotics and artificial intelligence (AI) are changing the fundamental structure of sectors across of the economy.

For investors, the name of the game is to look towards the potential growth of the technologies of tomorrow. And while venture capitalists have clearly shifted their focus towards RAAI (robotics, automation, and AI), it looks like public equity investors may need to play catch-up, especially in the US, where investors have only just begun to approach robotics, automation, and artificial intelligence as an investable theme. Since the ROBO Global Robotics & Automation

<sup>1</sup> [https://www.domo.com/learn/data-never-sleeps-5?aid=ogsm072517\\_1&sf100871281=1](https://www.domo.com/learn/data-never-sleeps-5?aid=ogsm072517_1&sf100871281=1)

<sup>2</sup> <https://www.businesswire.com/news/home/20180102005390/en/>

<sup>3</sup> <https://isrg.intuitive.com/news-releases/news-release-details/intuitive-surgical-announces-preliminary-fourth-quarter-and-4>



Index ETF was established in 2013, a dozen competing strategies have come to market around the world, totaling, by our estimates, approximately \$30B in assets under management. This is just a tiny drop in the bucket of the global equity markets, which total more than \$70T.

## THE REVOLUTION IS HAPPENING

At ROBO Global, we are not alone in our belief that RAAI's economic impact could be measured in the trillions of dollars.

- Andrew Ng, then Chief Scientist of Baidu and Adjunct Professor at Stanford who led the development of its Massive Open Online Course platform, has called Artificial Intelligence “the new electricity.”<sup>4</sup>
- Amazon CEO Jeff Bezos has said, “We are now solving problems with machine learning and artificial intelligence that were in the realm of science fiction for the last several decades. And natural language understanding, machine vision problems—it really is an amazing renaissance.”<sup>5</sup>
- Google CEO Sundar Pichai says artificial intelligence is going to have a bigger impact on the world than some of the most ubiquitous innovations in history.<sup>6</sup>

### *That's quite a revolution.*

The exponential growth trends across robotics and AI seem to be undeniable:

- The computing & AI market is projected to generate \$105.8B in revenue by 2025, up from \$5.4B in 2017—a CAGR of 45%. (Tractica)
- Venture Capital funding into US artificial intelligence startups grew 72% year-over-year, hitting over \$9.3B in 2018. (CB Insights)
- A new report by market intelligence firm Interact Analysis on order fulfillment robots said a “perfect storm” will drive the deployment of more than 580,000 robots over the next five years.

- When combined, key clinical health AI applications can potentially create \$150B in annual savings for the United States healthcare economy by 2026. (Accenture)
- Over 3.6 thousand AI startups across more than 70 countries have raised a whopping \$66B since 2013. (CB Insights)

The impact of that growth potential is evident. According to The Robot Report, over \$12B in investments flowed into robotics companies in 2018. In January 2019 alone, 25 different robotics startups were funded, cumulatively raising \$644M.

## FOR INVESTORS IN RAAI, THE FUTURE IS HERE

Investors who grasp this reality should consider seeking potential risk-adjusted returns by building a portfolio of industry leaders that is diversified across geographies, small and large companies, and technologies and applications. Additionally, they should rely on the guidance of industry experts, academics, and entrepreneurs to select tomorrow's potential growth leaders and provide the knowledge and insight to more accurately foresee emerging trends, identify the most promising new technologies, and understand the intricate interaction between technologies and their specific applications.

Today, it seems there's an index available to tackle nearly every theme and style an investor can dream up, giving investors more options to choose from than ever. But understanding precisely what those options actually offer can be a challenge—even for experienced investors and portfolio managers. To decipher this complexity, it is important to investigate how an index is constructed and how often it is rebalanced, as well as the index turnover rate, performance history, and track record. For investors seeking a way to capture the growth of robotics and AI, these are the details that matter. The time to invest in all that RAAI has to offer is now.

<sup>4</sup> <https://www.gsb.stanford.edu/insights/andrew-ng-why-ai-new-electricity>

<sup>5</sup> <https://www.cnn.com/2017/05/08/amazon-jeff-bezos-artificial-intelligence-ai-golden-age.html>

<sup>6</sup> <https://www.cnn.com/2018/02/01/google-ceo-sundar-pichai-ai-is-more-important-than-fire-electricity.html>

## ROBO METHODOLOGY PROVIDES UNIQUE EXPOSURE

### PHYSICAL REPLICATION

The ROBO Global® Robotics & Automation Index ETF directly tracks the index to offer investors direct exposure to the theme.

### INDUSTRY EXPERTISE

We believe the expertise of the ROBO Global® research and advisory board helps enormously to capture the entire value chain of robotics, artificial intelligence, and automation in the ROBO Global® Robotics & Automation Index.

### GROWTH DIVERSIFIER

The index has a typical market cap breakdown of 75% to small to mid-caps and 25% to large caps. It therefore has less than 2% overlap with traditional benchmarks such as the ACWI.

### BROAD GLOBAL EXPOSURE

The two-tier, equal-weighting scheme of the index provides fair, diversified exposure to technology and market leaders of all sizes while mitigating company specific risks in the basket. The index rebalances quarterly.

### PRODUCT INFORMATION CHART:



**Fund Name:** ROBO Global Robotics & Automation Index ETF

**Benchmark:** ROBO Global Robotics & Automation Index

**Ticker:** ROBO

**Listings:** NYSE Arca

**Fund Inception Date:** October 21, 2013

**Expense Ratio:** 0.95%

**Issuer:** Exchange Traded Concepts

**ROBO Global's Industry Classification is a forward-looking road map, supported by insights from a dedicated coverage team, to ensure sub-sectors evolve and expand at the right time. The Industry Classification is updated on a quarterly basis and managed by the ROBO Global Industry Classification Committee.**



LOGISTICS & AUTOMATION



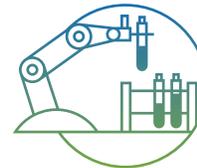
FOOD & AGRICULTURE



SECURITY/SURVEILLANCE



ENERGY



HEALTHCARE



CONSUMER



SENSING



ACTUATION



COMPUTING,  
PROCESSING & AI



INTEGRATION



3D PRINTING



MANUFACTURING

## INDEX & WEIGHTING METHODOLOGY

The index is weighted based on a bellwether (BW) and non-bellwether (NBW) classification. Bellwether companies are fast-growing companies whose core business model focuses around robotics and automation. Non-bellwether companies are largely established players whose businesses derive a distinct portion of their revenues from robotics and automation, and which have the potential to grow through their technology and innovation set.

The index follows a two-tier, equal weighing scheme, allocating to both BW and NBW companies to capture the growth prospects of both emerging and established companies. The index rebalances quarterly to maintain diversification and remain responsive to market trends and new entrants.

Including more than 80 stocks across 12 subsectors in 15 countries, the index is built to minimize risk by limiting reliance on the largest-cap players, and to capture the potential growth of rapidly developing healthcare technology companies around the globe.

## LEARN MORE

To learn more about the ROBO Global Robotics & Automation Index ETF, visit [www.roboglobal.etfs.com/ROBO](http://www.roboglobal.etfs.com/ROBO).

Diversification may not protect against market risk. Investing involves risk, including the possible loss of principal. Narrowly focused investments and investments in smaller companies typically exhibit higher volatility. International investments may also involve risk from unfavorable fluctuations in currency values, differences in generally accepted accounting principles, and from economic or political instability. Emerging markets involve heightened risks related to the same factors as well as increased volatility and lower trading volume. Indices are unmanaged. One cannot invest directly in an index. There is no guarantee the fund will achieve its stated objective. Holdings are subject to change. Current and future holdings are subject to risk.

The Fund invests primarily in the equity securities of robotics and automation companies and, as such, is particularly sensitive to risks to those types of companies. These risks include, but are not limited to, small or limited markets for such securities, changes in business cycles, world economic growth, technological progress, rapid obsolescence, and government regulation.

**Carefully consider the Fund's investment objectives, risk factors, charges and expenses before investing. This and additional information can be found in the Fund's full or summary prospectus, which may be obtained at [www.roboglobal.etfs.com](http://www.roboglobal.etfs.com). Read the prospectus carefully before investing.**

This information is not intended to be individual or personalized investment or tax advice and should not be used for trading purposes.

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Shares are bought and sold at market price (closing price) not net asset value (NAV) and are not individually redeemed from the Fund. Market price returns are based on the midpoint of the bid/ask spread at 4:00 pm Eastern Time, and do not represent the return you would receive if you traded at other times.