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# INVESTING IN THE FUTURE: THE WISDOMTREE ARTIFICIAL INTELLIGENCE AND INNOVATION FUND

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When people hear “AI,” their minds frequently jump to the ominous image Hollywood has painted through films like *The Terminator* and *The Matrix*—entertaining but not necessarily an accurate portrayal of AI.

Something more realistic and familiar might be the chatbot you encountered when trying to return an order to an online retailer. Or it could be your phone recognizing your face when it unlocks, or maybe your car preemptively applying the brakes when the car in front of you slows down quickly. These are a few real-world examples of areas where AI influences our lives for the better today.

As exciting innovations in AI continue to be made and applied in novel ways, industries will be revolutionized to reach new horizons. Some of the greatest progress we have seen over the last few years has been in areas like drug discovery, autonomous driving and language translation.

## What Is AI Today? Software and Semiconductors

### *Software*

One recent area of focus for AI has been drug discovery, which is utilizing AI with the explicit goal of helping an expert researcher achieve a faster solution.

- **Natural Language Processing:** It is possible for today’s software applications to recognize and process text, creating a searchable database of all relevant research published on a particular topic. In drug discovery, all prior published clinical research could be processed quickly, and important notations flagged for a human researcher, mitigating the risk of wasted attempts going down paths already trodden.
- **Generative Design:** There could be billions of ways to attempt to arrange different molecules. With AI, the rules of chemistry can be “learned” by an algorithm through observations of molecular data, and arrays of solutions can be suggested within the given parameters set by the researcher.

Drug discovery is not at a point where the software alone can instantly develop new drugs. But it can be used to augment the efforts of human experts, potentially allowing the research phase to conclude faster. **Augmenting** the capabilities of strong human skills is a big theme within AI.

### *Semiconductors*

The key to semiconductors is understanding their function—data collection, storage, transfer and computation—all necessities for AI. Grasping their ultimate placement and purpose offers additional context for their important role in the AI ecosystem.

- **At the Edge:** Within AI, the term “edge” means data is collected at a peripheral location, and the AI model can be run without the need to send the data elsewhere. These chips are specialized for their use case in the sense that if a chip is in a drone for navigation, it is constrained to a limited size and weight, as well as power consumption rate, so it can fly without burning through its battery life.

- **In the Cloud:** OpenAI put out its GPT3 language model—a model with 175 billion parameters. Training models of this size require immense computational resources, most likely within the cloud. The chips here can be manufactured with a single thought in mind: maximum performance.

One must recognize that semiconductors are designed to serve a specific function, and the industry is moving toward more highly customized chips fit for individualized purposes—like how Apple started developing its own semiconductors for its products recently, bypassing the services of Intel.

### How Does WisdomTree Capture This Unique Opportunity? Enter [WTAI](#)

To offer unique access to the AI investment domain, we introduce the [WisdomTree Artificial Intelligence and Innovation Fund \(WTAI\)](#), the fund that seeks to track the price and yield performance, before fees and expenses, of the [WisdomTree Artificial Intelligence & Innovation Index \(WAI\)](#).

In reviewing the competition, WisdomTree concluded two things:

- Pure rules-based approaches, like screening for the number of patents or revenue based on certain business activities, may be too broad to focus on companies more precisely exposed to AI. It is also difficult to rank these criteria: are more AI patents better than fewer AI patents? It's hard to say without knowing more about the company or the competitive advantage offered by a specific patent.
- Approaches that loosely define AI and select the obvious players may be too broad for the needs of many investors, or investors may already inherently own the companies through existing exposure to the broad-based benchmarks such as the [Nasdaq 100 Index](#) or [S&P 500 Index](#) Information Technology Sector.







We created a more flexible and comprehensive approach to the AI investment process, focused on an appropriate mix of quantitative and qualitative research.

By blending technical capabilities such as natural language processing and fundamental analysis with human intervention, the index construction process focuses on the specific functionality that each constituent is contributing to the development and deployment of AI, which provides precise access to this megatrend.

The WisdomTree Artificial Intelligence and Innovation Index identifies companies that are involved in targeted AI subthemes within each of the following categories:

- **Software**
- **Semiconductors**
- **Other AI Hardware**
- **Innovation**

The constituents identified are then ranked and weighted to determine the final allocation within the Index and rebalanced semi-annually.

Define Universe	Identify	Classify	Screen for Eligibility Criteria	Select The Top	Allocate Weight & Rebalance
 Start with 40,000+ Global Listings across developed and emerging markets.	 Identify companies that are involved in the targeted artificial intelligence activities.  A company's engagement in these activities and hardware is determined via applicable language in its company description, Annual Report, 10K or equivalent report, earnings call transcripts, patent submissions, news and press releases, as well as via exposure to relevant industry classifications.	 Classify companies into one of the investment categories:  <ul style="list-style-type: none"> <li>• Semiconductors</li> <li>• Other AI Hardware</li> <li>• AI Software</li> <li>• Innovation</li> </ul>	 Identified companies are screened for the following requirements:  <ul style="list-style-type: none"> <li>• Minimum \$250m market cap</li> <li>• Average daily traded volume &gt; \$3m</li> <li>• Free float &gt; 20%</li> </ul>	 Companies are ranked within the categories, and the top are selected for review by the Committee.  Companies not included in the initial universe, but considered by to be materially involved in the key themes are added to the list for review.	 Companies are equally weighted within each category:  <ul style="list-style-type: none"> <li>• Semiconductors</li> <li>• Other AI Hardware</li> <li>• AI Software</li> <li>• Innovation</li> </ul> The Index is rebalanced semi-annually.

Source: WisdomTree. WisdomTree Artificial Intelligence and Innovation Index (WAI) methodology, as of inception, 11/9/21. The WisdomTree Artificial Intelligence and Innovation Fund (WTAI) seeks to track the performance of the underlying Index, WAI.

The targeted subthemes within each of the four major categories are highlighted below for additional detail into the pinpointed exposures in the Index.

By selecting companies with a direct focus in these areas, WAI seeks to provide a diversified but what we believe to be pure-play AI investment option with robustness not yet seen in the ETF marketplace.

AI Software	Semiconductors	Other Hardware
<ul style="list-style-type: none"> <li>Natural Language Processing &amp; Machine Translation</li> <li>Voice Recognition &amp; Audio Processing</li> <li>Chatbots &amp; Virtual Assistants</li> <li>Computer Vision &amp; Image Recognition</li> <li>Knowledge Graphs &amp; Intelligent Search</li> <li>Machine Learning &amp; Data Science</li> </ul>	<ul style="list-style-type: none"> <li>Memory Devices</li> <li>Compute Devices</li> <li>Sensors</li> <li>Edge Computing</li> <li>Semiconductor Manufacturing Software &amp; Equipment</li> </ul>	<ul style="list-style-type: none"> <li>Autonomous Vehicles</li> <li>Robotics</li> <li>Industrial Automation</li> <li>Drones</li> </ul>
Innovation		
Any disruptive application of the technologies above in an existing domain. Examples include the application of natural language processing and image recognition in insurance for handling claims, data science for drug discovery, and media or merchandisers offering customized product recommendations using proprietary data and algorithms.		

Source: WisdomTree. Targeted AI subthemes within each category as of Index inception, 11/9/21.

## Index Characteristics

The top holdings, geographic exposures, category and sub industry classifications, [market capitalizations](#) and aggregate growth and valuation statistics can be found below.

As of Index inception on November 9, 2021, the Index had 75 companies that ranged in weight from <1% to approximately 2%.

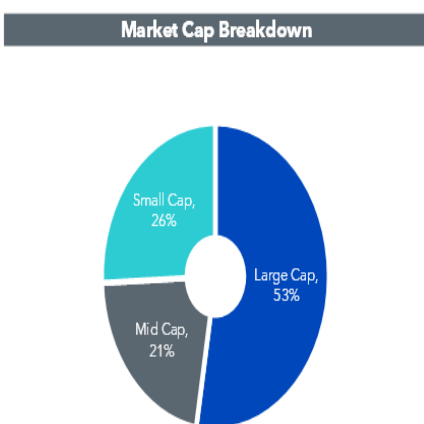
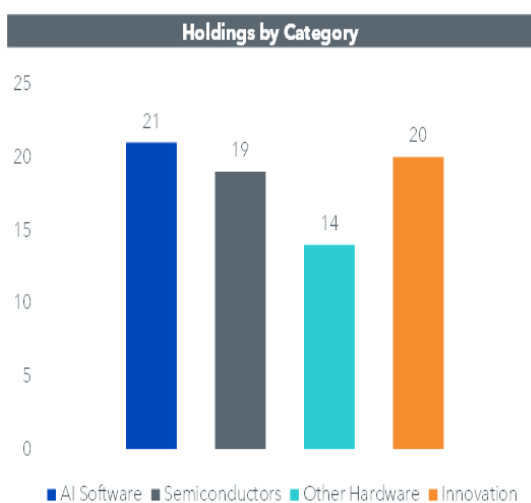
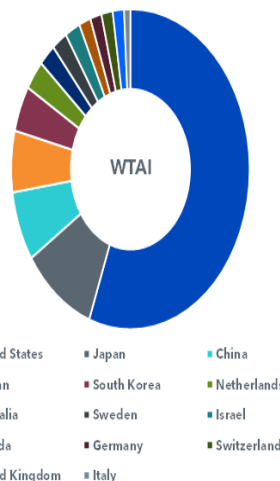
The allocations across the four major categories were the following: 30% AI Software, 30% Semiconductors, 20% Other AI Hardware and 20% Innovation.

Each constituent is approximately equal weighted within each category, with slight adjustments based on liquidity. The Index has a tilt toward large cap, partially due to the majority of company selections within Semiconductors having sizeable market capitalizations, as the industry is quite consolidated. When breaking things down by [GICs Sub Industry Classification](#), we see broad diversification with the largest weight to Semiconductors and Application Software, accounting for a little more than 40% of the Index.

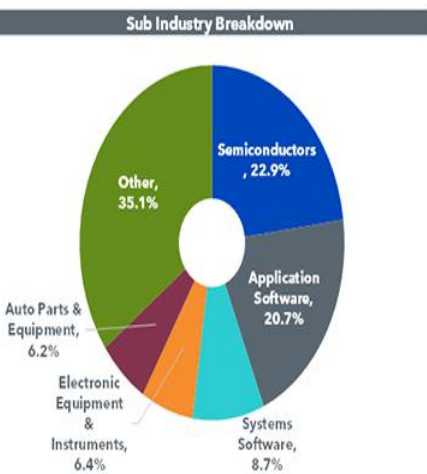
Geographically, the Index covers the global investment landscape, with approximately 55% allocation to the U.S., 10% to Japan, 7% to each of China and Taiwan, 5% to Korea and the remainder spread out among other developed market countries. The exposure to Asia is largely attributed to the Semiconductors allocation, as many of the top manufacturers are domiciled in this region.

Lastly, on a price-to-sales valuation, WAI offers less expensive growth characteristics compared to the benchmarks, with significant contribution from the AI Software category. Details are shown below and on the Fund page.

Top 10 Companies	Primary Category	Sub Themes	Weight
Grid Dynamics Holdings, Inc.	AI Software	Enterprise AI & ML	1.89%
Luminar Technologies, Inc.	Other Hardware	Autonomous Driving	1.77%
PROS Holdings, Inc.	AI Software	AI Enhanced E-Commerce & Pricing	1.65%
Advanced Micro Devices, Inc.	Semiconductors	Graphics Processing Units	1.62%
QUALCOMM, Inc.	Semiconductors	Broad Semiconductors & Autonomous Vehicles	1.60%
Alchera, Inc. (Korea)	AI Software	Image Recognition & Augmented Reality	1.59%
Kinaxis, Inc.	AI Software	AI Optimized Supply Chain Management	1.59%
CrowdStrike Holdings, Inc.	AI Software	AI Cybersecurity & Threat Detection	1.57%
Macronix International Co., Ltd.	Semiconductors	Flash Memory & Automotive Chips	1.56%
C3.ai, Inc.	AI Software	Enterprise AI & ML	1.56%



Growth & Valuation				
	WAI	MSCI World IT	500G	Nasdaq 100
Price-to-Earnings (ex neg)	26.01	33.49	33.97	33.7
Forward Price-to-Earnings (ex neg)	27.28	28.89	29.5	29.23
Price-to-Sales	4.68	6.81	5.91	5.69
Est. Long-Term Growth	17.19	18.06	19.35	20.86
Wgt. Avg. Est. Long-Term Growth	13.15	17.77	19.3	20.82
Median 1Y Sales Growth	28.00%	16.90%	16.60%	19.50%
Wgt. Avg. 1Y Sales Growth	77.90%	28.30%	44.50%	74.90%



Sources: WisdomTree, Bloomberg. Top holdings, geographic revenues, categories, sub industries and market caps as of November 11, 2021. Growth & Valuation statistics as of November 30, 2021.

Large caps are companies with market capitalization above \$10 billion. Mid-caps are companies with market capitalization between \$2 billion and \$10 billion. Small caps are companies with market capitalization equal to or less than \$2 billion.

You cannot invest directly in an index. Weightings are subject to change. References to specific securities and their issuers are for illustrative purposes only and are not intended to be, and should not be interpreted as, recommendations to purchase or sell such securities.

MSCI World IT = MSCI World Information Technology Index. 500G = S&P 500 Growth Index.

For definitions of terms/indexes in the charts, please visit the [glossary](#).

### **The WisdomTree Artificial Intelligence and Innovation Fund (WTAI)**

To offer investors access to key areas of innovation in AI, WisdomTree created [WTAI](#), which seeks to track the price and yield performance, before fees and expenses, of the WisdomTree Artificial Intelligence and Innovation Index. With diversified\* exposure to what we believe to be the fastest-growing and most exciting opportunities in the AI value chain, [WTAI](#) can be an option within a portfolio's growth allocation.

\*The Fund is considered to be non-diversified, which means that it may invest more of its assets in the securities of a single issuer or a smaller number of issuers than if it were a diversified fund. Diversified in this context refers to the fund investing in multiple AI themes.

#### **Important Risks Related to this Article**

The Fund invests in companies primarily involved in the investment themes of artificial intelligence (AI) and innovation. Companies engaged in AI typically face intense competition and potentially rapid product obsolescence. These companies are also heavily dependent on intellectual property rights and may be adversely affected by loss or impairment of those rights. Additionally, AI companies typically invest significant amounts of spending on research and development, and there is no guarantee that the products or services produced by these companies will be successful. Companies that are capitalizing on innovation and developing technologies to displace older technologies or create new markets may not be successful. The Fund invests in the securities included in, or representative of, its Index regardless of their investment merit, and the Fund does not attempt to outperform its Index or take defensive positions in declining markets. The composition of the Index is governed by an Index Committee, and the Index may not perform as intended. Please read the Fund's prospectus for specific details regarding the Fund's risk profile.

For standardized performance and the most recent month-end performance click [here](#) NOTE, this material is intended for electronic use only. Individuals who intend to print and physically deliver to an investor must print the monthly performance report to accompany this blog.

View the online version of this article [here](#).

## **IMPORTANT INFORMATION**

**U.S. investors only: Click [here](#) to obtain a WisdomTree ETF prospectus which contains investment objectives, risks, charges, expenses, and other information; read and consider carefully before investing.**

There are risks involved with investing, including possible loss of principal. Foreign investing involves currency, political and economic risk. Funds focusing on a single country, sector and/or funds that emphasize investments in smaller companies may experience greater price volatility. Investments in emerging markets, currency, fixed income and alternative investments include additional risks. Please see prospectus for discussion of risks.

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You cannot invest directly in an index.

## **DEFINITIONS**

**Nasdaq 100 Index** : Includes 100 of the largest domestic and international non-financial companies listed on The Nasdaq Stock Market based on market capitalization. The Index reflects companies across major industry groups including computer hardware and software, telecommunications, retail/wholesale trade and biotechnology. It does not contain securities of financial companies, including investment companies.

**S&P 500 Index** : Market capitalization-weighted benchmark of 500 stocks selected by the Standard and Poor's Index Committee designed to represent the performance of the leading industries in the United States economy.

**Market Capitalization** : Market cap = share prices x number of shares outstanding. Firms with the highest values receive the highest weights in approaches designed to weight firms by market cap.

**GICS** : Global Investment Classification System, which assigns companies to specific industries and sectors.