

Bosch AI research paper honored at 2019 NeurIPS Conference

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Paper co-authored by AI scientist Zico Kolter earns Outstanding New Directions Paper Award

- ▶ Kolter is chief scientist of AI research at the Bosch Center for Artificial Intelligence
- ▶ Award highlights Bosch Center for Artificial Intelligence's leadership in industrial AI
- ▶ NeurIPS is one of the world's preeminent scientific conferences on machine learning

VANCOUVER, British Columbia – The [Bosch Center for Artificial Intelligence \(BCAI\)](#) is honored to announce that a research paper co-written by Chief Scientist of AI Research Zico Kolter has received the Outstanding New Directions Paper Award at the [2019 Neural Information Processing Systems \(NeurIPS\) Conference](#).

The NeurIPS Conference, which takes place from Dec. 8-16 in Vancouver, is one of the world's preeminent scientific conferences on machine learning and neural information processing systems. The NeurIPS organization announces its annual [Outstanding Paper Awards](#) at each year's conference. The Outstanding New Directions Paper Award was introduced at this year's event, where BCAI has a show-floor booth presence.

[According to NeurIPS](#), the award was created to highlight research papers that may introduce new techniques for future artificial intelligence (AI) research.

“Deep learning is driving a huge number of AI applications, including computer vision, audio analysis, and automated driving.” Kolter said about the inspiration for the research paper. “Yet for all the empirical success of deep learning, we still don’t have a fundamental understanding of why it works so well. This paper offers one perspective, showing that a common approach used by the AI community may not be able to explain why deep learning works.”

The 2019 Outstanding New Directions Paper Award

Titled “Uniform convergence may be unable to explain generalization in deep learning,” the winning paper was co-authored by Kolter and Carnegie Mellon University PhD student Vaishnavh Nagarajan, whose PhD work is supported by funding from Bosch. The research paper questions certain approaches used to analyze deep neural networks, ones that may require alternative solutions to ensure safe, secure, robust and explainable AI.

According to Kolter, the research paper’s findings could alter how we think about the core methods of deep learning. The paper also offers new illustrative examples that could lead to alternative machine learning analysis techniques.

Kolter and Nagarajan’s research paper was one of thousands of papers submitted to the Paper Award Committee for this year’s program. Of those thousands of submissions, only two papers received Paper Award honors.

According to Bosch Chief Technology Officer and Chief Digital Officer Michael Bolle, the NeurIPS recognition underscores Bosch’s commitment to AI as a core technology and its status as a leading player in industrial AI.

“This high recognition from NeurIPS honors the academic work we do at BCAI,” said Bolle. “It shows that we are working on the right topics to make AI more robust, safe and secure, which are all essential qualities for industrial AI applications.”

Cutting-edge innovation meets academic collaboration

The winning paper highlights the research benefits of Bosch’s strong ties to the academic community. In addition to his role at BCAI, Kolter is an associate professor at the School of Computer Science at Carnegie Mellon University (CMU) in Pittsburgh.

In June 2018, Bosch in North America launched the BCAI Research Lab in Pittsburgh and announced an 8 million USD investment to sponsor AI research at CMU. Through collaborative research efforts with the world-renowned university, Bosch aims to develop future skills in the field of AI while accelerating introduction of AI into practical industrial applications.

Kolter is a leading expert in AI research who has worked on applications for smart energy and sustainability solutions, as well as methods to help make machine learning more modular, robust and explainable. As part of the BCAI Research Lab launch in Pittsburgh,

Kolter joined Bosch as chief scientist of AI research at BCAI, where he directs CMU research projects while contributing to Bosch's global R&D efforts.

About the Bosch Center for Artificial Intelligence (BCAI)

Founded in 2017, the Bosch Center for Artificial Intelligence elevates Bosch's leadership position in the field of industrial AI by attracting top talent, conducting unique research and identifying opportunities for applied AI in Bosch's products and services. With locations in the U.S., Germany, India, China and Israel, the BCAI team has strong ties to the academic community to help generate real-world impact in several focus areas of AI research. For more information, visit [bosch-ai.com](https://www.bosch-ai.com).

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About Bosch

The Bosch Group is a leading global supplier of technology and services. It employs roughly 410,000 associates worldwide (as of December 31, 2018). The company generated sales of 78.5 billion euros (\$92.7 billion) in 2018. Its operations are divided into four business sectors: Mobility Solutions, Industrial Technology, Consumer Goods, and Energy and Building Technology. As a leading IoT company, Bosch offers innovative solutions for smart homes, smart cities, connected mobility, and connected manufacturing. It uses its expertise in sensor technology, software, and services, as well as its own IoT cloud, to offer its customers connected, cross-domain solutions from a single source. The Bosch Group's strategic objective is to create solutions for a connected life. Bosch improves quality of life worldwide with products and services that are innovative and spark enthusiasm. In short, Bosch creates technology that is "Invented for life." The Bosch Group comprises Robert Bosch GmbH and its roughly 460 subsidiary and regional companies in over 60 countries. Including sales and service partners, Bosch's global manufacturing, engineering, and sales network covers nearly every country in the world. The basis for the company's future growth is its innovative strength. At nearly 130 locations across the globe, Bosch employs some 68,700 associates in research and development.

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