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## Microsoft researchers present 18 papers at the International Conference on Machine Learning

June 17, 2016 | By Microsoft blog editor

*By Athima Chansanchai, Microsoft News Center Staff*

Machine learning covers a lot of ground. At Microsoft, it's being incorporated to detect lies, recognize human responses and forecast finances; as well as improve search, natural language processing, advertising, security and gaming. It's a broad discipline that touches daily life through artificial intelligence and the cloud – and it's growing by leaps and bounds.



John Langford, Principal Researcher, Microsoft Research

"Machine learning is working. It's making a big difference in a lot of different applications that really matter for the future," says [John Langford](#), an expert on machine learning at the Microsoft Research lab in New York City who is also the general chair for the [International Conference on Machine Learning](#), which has grown by 65 percent since last year thanks to the technology's success. "Figuring out how to use data to make decisions to help people is what machine learning is about."

Machine learning saves time. A lot of it. Advanced analytics and data science resources make it possible for once-arduous tasks to get done quickly. It can speed up a multitude of normally time-consuming processes, such as vision recognition, causality, crowd sourcing and more.

"Now we're seeing more work in neural networks and deep learning than in previous years," says Langford of some prevalent themes in this year's conference. "There's quite a lot of people working on a lot of different subjects. By far, this is the largest ICML ever. The field is really growing fast."

Focused on machine learning, algorithms and systems, ICML begins Sunday, June 19, and includes tutorials, presentations of accepted papers and workshops on more recent research. Nearly 3,000 participants are expected

at the five-day conference.

"Microsoft has a longstanding role in this community. We've supported machine learning research for decades," Langford says. The conference is so popular this year, they were in need of more space, he says. Luckily, the Microsoft Technology Center is next door to help handle the overflow.

While more than 1,300 papers were submitted, only 332 were accepted. Out of those, 18 are collaborations with Microsoft researchers.

One of them, "[No Oops, You Won't Do It Again: Mechanisms for Self-correction in Crowdsourcing](#)," (by Nihar Shah at UC Berkeley and Dengyong Zhou of Microsoft Research) focuses on improving the quality of data using a self-correction mechanism. Another, "[CryptoNets: Applying Neural Networks to Encrypted Data with High Throughput and Accuracy](#)," (by Nathan Dowlin of Princeton; and Ran Gilad-Bachrach, Kim Laine, Kristin Lauter, Michael Naehrig and John Wernsing of Microsoft Research) looks at how machine learning can help maintain privacy and security with medical, financial and other sensitive data. Their work involves a method that allows a person to send their data in an encrypted form to a cloud service that hosts the network, which keeps the data confidential since the cloud does not have access to the keys needed to decrypt it.

And "[Doubly Robust Off-policy Value Evaluation for Reinforcement Learning](#)," (by Nan Jiang at the University of Michigan and Lihong Li of Microsoft Research) studies the problem of estimating the value of a new policy based on data collected by a different policy in reinforcement learning (RL). This problem is often a critical step when applying RL to real-world problems. Their research guarantees a lack of bias and can have a much lower variance than the popular importance sampling estimators.

**The other accepted papers at ICML that feature Microsoft researchers are:**

- "[Dropout Distillation](#)" by Samuel Rota Bulò (FBK), Lorenzo Porzi (FBK), Peter Kotschieder (Microsoft Research Cambridge)

- [Parameter Estimation for Generalized Thurstone Choice Models](#)” by Milan Vojnovic, Seyoung Yun (Microsoft)
- [“Network Morphism”](#) by Tao Wei (University at Buffalo), Changhu Wang and Yong Rui (Microsoft Research), Chang Wen Chen
- [“Exact Exponent in Optimal Rates for Crowdsourcing”](#) by Chao Gao and Yu Lu (Yale University), Dengyong Zhou (Microsoft Research)
- [“Analysis of Deep Neural Networks with Extended Data Jacobian Matrix”](#) by Shengjie Wang (University of Washington), Abdel-rahman Mohamed, Rich Caruana (Microsoft), Jeff Bilmes (University of Washington), Matthai Philipose, Matthew Richardson, Krzysztof Geras, Gregor Urban (UC Irvine), Ozlem Aslan
- [“Analysis of Variational Bayesian Factorizations for Sparse and Low-Rank Estimation”](#) by David Wipf (Microsoft Research)
- [“Non-negative Matrix Factorization under Heavy Noise”](#) by Jagdeep Pani (Indian Institute of Science), Ravindran Kannan, Chiranjib Bhattacharya and Navin Goyal (Microsoft Research India)
- [“Optimal Classification with Multivariate Losses”](#) by Nagarajan Natarajan (Microsoft Research India), Oluwasanmi Koyejo (Stanford University and University of Illinois at Urbana Champaign), Pradeep Ravikumar (UT Austin), Inderjit
- [“Black-box Optimization with a Politician”](#) by Sebastien Bubeck (Microsoft), Yin Tat Lee (MIT)
- [“Efficient Algorithms for Adversarial Contextual Learning”](#) by Vasilis Syrgkanis, Akshay Krishnamurthy and Robert Schapire (Microsoft Research)
- [“Principal Component Projection Without Principal Component Analysis”](#) by Roy Frostig (Stanford University), Cameron Musco and Christopher Musco (MIT), Aaron Sidford (Microsoft Research)
- [“Faster Eigenvector Computation via Shift-and-Invert Preconditioning”](#) by Dan Garber (TTI Chicago), Elad Hazan (Princeton University), Chi Jin (UC Berkeley), Sham, Cameron Musco (MIT), Praneeth Netrapalli and Aaron Sidford (Microsoft Research)
- [“Efficient Algorithms for Large-scale Generalized Eigenvector Computation and CCA”](#) by Rong Ge and Chi Jin (UC Berkeley), Sham, Praneeth Netrapalli and Aaron Sidford (Microsoft Research)
- [“The Label Complexity of Mixed-Initiative Classifier Training”](#) by Jina Suh (Microsoft), Xiaojin Zhu (University of Wisconsin), Saleema Amershi (Microsoft)
- [“Bayesian Poisson Tucker Decomposition for Learning the Structure of International Relations”](#) by Aaron Schein, Mingyuan Zhou, Blei David (Columbia), Hanna Wallach (Microsoft)

In addition to the papers, there are two workshops with Microsoft researchers: “Multi-View Representation Learning” with Xiaodong He and Scott Wen-tau Yih, and “Advances in non-convex analysis and optimization” by Praneeth Netrapalli.

**Related:**

- [International Conference on Machine Learning](#)
- [Decades of computer vision research, one ‘Swiss Army knife’](#)
- [Microsoft releases CNTK, its open source deep learning toolkit, on GitHub](#)

*Athima Chansanchai is a writer for the Microsoft News Center. Follow her on [Twitter](#).*

Up Next



Artificial intelligence

[Machine learning and the learning machine with Dr. Christopher Bishop >](#)

November 28, 2018

Episode 52, November 28, 2018 - Dr. Christopher Bishop talks about the past, present and future of AI research, explains the No Free Lunch Theorem, talks about the modern view of machine learning (or how he learned to stop worrying and love uncertainty), and tells how the real excitement in the next few years will be the growth in our ability to create new technologies not by programming machines but by teaching them to learn.



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Artificial intelligence, Human-computer interaction

[Reflections – the Grace Hopper Conference past and present >](#)

September 26, 2018

This year I will be attending the Grace Hopper Celebration of Women in Computing (GHC), where I will be part of a panel discussion on the topic, “Will Artificial Intelligence Eliminate Accessibility Barriers?” (at noon on Wednesday, Sept. 26th). I’ve attended GHC three times in the past, but I must admit I am simultaneously excited [...]



**Meredith Ringel Morris**

Principal Researcher and Research Manager

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Artificial intelligence  
[AI, machine learning and the reasoning machine with Dr. Geoff Gordon >](#)  
April 25, 2018

Episode 21, April 25, 2018 - Dr. Gordon gives us a brief history of AI, including his assessment of why we might see a break in the weather-pattern of AI winters, talks about how collaboration is essential to innovation in machine learning, shares his vision of the mindset it takes to tackle the biggest questions in AI, and reveals his life-long quest to make computers less... well, less computer-like.

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