

# KDD 2016 Plenary Panel

## Is Deep Learning the New 42?

**Moderator: Andrei Broder:** Distinguished Scientist / Google

Monday, August 15 - 1:45pm to 3:45pm (Yosemite A/B/C)

### Plenary Panels

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The history of deep learning goes back more than five decades but in the marketplace of ideas its perceived value went through booms and busts. We are no doubt at an all time high: in the last couple of years we witnessed extraordinary advances in vision, speech recognition, game playing, translation, and so on, all powered by deep networks. At the same time companies such as Amazon, Apple, Facebook, Google, and Microsoft are making huge bets on deep learning research and infrastructure, ML competitions are dominated by deep learning approaches, open source deep learning software is proliferating, and the popular press both cheerleads the progress and raises the dark specter of unintended consequences.

So is deep learning the answer to everything?

According to Douglas Adams's famous "Hitchhiker's Guide to the Galaxy" after 7.5 millions years of work the "Deep Thought" computer categorically found out that 42 is the "Answer to the Ultimate Question of Life, the Universe, and Everything" (although unfortunately, no one knows exactly what *that* question was).

Rather than wait another 7.5 million years for "Deep Thought" to answer our quest we have assembled a distinguished panel of experts to give us their opinion on deep learning and its present and future impact.

We will start with a round of questions from the moderator followed by live and on-line questions from the audience. Prizes will be given for the best questions!

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### Panelist: Pedro Domingos, Professor, University of Washington

Pedro Domingos is a professor of computer science at the University of Washington and the author of "The Master Algorithm". He is a winner of the SIGKDD Innovation Award, the highest honor in data science. He is a Fellow of the Association for the Advancement of Artificial Intelligence, and has received a Fulbright Scholarship, a Sloan Fellowship, the National Science Foundation's CAREER Award, and numerous best paper awards. He received his Ph.D. from the University of California at Irvine and is the author or co-author of over 200 technical publications. He has held visiting positions at Stanford, Carnegie Mellon, and MIT. He co-founded the International Machine Learning Society in 2001. His research spans a wide variety of topics in machine learning, artificial intelligence, and data

deep learning.

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**Panelist: Nando de Freitas, Professor, Oxford University**

Nando de Freitas is a machine learning professor at Oxford University and a Team Lead at Google DeepMind. He is a Fellow of the Canadian Institute For Advanced Research and the Alan Turing Institute. He is also an action editor for the Journal of Machine Learning Research.



Nando obtained his PhD on “Bayesian methods for neural networks” at Trinity College, Cambridge University. From 1999 to 2001, he was an AI postdoctoral fellow at UC Berkeley. He was a professor at the University of British Columbia from 2001 to 2013. Nando has spun-off a few tech companies and received several awards, including several best paper awards, the Charles A. McDowell Award for Excellence in Research, and the Mathematics of Information Technology and Complex Systems Young Researcher Award.

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**Panelist: Isabelle Guyon, Professor, Université Paris-Saclay**

Isabelle Guyon is chaired professor in “big data” at the Université Paris-Saclay, specialized in statistical data analysis, pattern recognition and machine learning. Her areas of expertise include computer vision and and bioinformatics. Her recent interest is in applications of machine learning to the discovery of causal relationships. Prior to joining Paris-Saclay she worked as an independent consultant and was a researcher at AT&T Bell Laboratories, where she pioneered applications of neural networks to pen computer interfaces (with collaborators including Yann LeCun and Yoshua Bengio) and co-invented with Bernhard Boser and Vladimir Vapnik Support Vector Machines (SVM), which became a textbook machine learning method. She is also the primary inventor of SVM-RFE, a variable selection technique based on SVM. The SVM-RFE paper has thousands of citations and is often used as a reference method against which new feature selection methods are benchmarked. She also authored a seminal paper on feature selection that received thousands of citations. She organized many challenges in Machine Learning since 2003 supported by the EU network Pascal2, NSF, and DARPA, with prizes sponsored by Microsoft, Google, Facebook, Amazon, Disney Research, and Texas Instrument. Isabelle Guyon holds a Ph.D. degree in Physical Sciences of the University Pierre and Marie Curie, Paris, France. She is president of Chalearn, a non-profit dedicated to organizing challenges, vice-president of the Unipen foundation, adjunct professor at New-York University, action editor of the Journal of Machine Learning Research, editor of the Challenges in Machine Learning book series of Microtome, and program chair of the upcoming NIPS 2016 conference.



helped develop concepts and techniques such as anisotropic diffusion for image de-noising, normalized cuts for clustering and segmentation, high dynamic range imaging, ecological statistics of perceptual grouping, and machine learning approaches to visual recognition. He has mentored more than fifty PhD students and postdocs who occupy prominent positions in academia and industrial research labs. After a BS in Electrical Engineering from IIT Kanpur in 1980 and a PhD in Computer Science from Stanford University in 1985, Jitendra joined UC Berkeley where he is currently the Arthur J. Chick Professor and Chair of the Department of EECS. He spent



2015-2016 as a visiting researcher at Google. Jitendra Malik received the Distinguished Researcher Award in Computer Vision from IEEE PAMI-TC and the K.S. Fu Prize of the International Association of Pattern Recognition. He is a member of both the National Academy of Sciences and the National Academy of Engineering, and a Fellow of the American Academy of Arts and Sciences.

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**Panelist: Jennifer Neville, Professor, Purdue University**

Jennifer Neville is the Miller Family Chair Associate Professor of Computer Science and Statistics at Purdue University. She received her PhD from the University of Massachusetts Amherst in 2006. In 2012, she was awarded an NSF Career Award, in 2008 she was chosen by IEEE as one of "AI's 10 to watch", and in 2007 was selected as a member of the DARPA Computer Science Study Group. Her research focuses on developing data mining and machine learning techniques for relational domains, which include social, information, and physical networks.



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**Moderator: Andrei Broder, Distinguished Scientist, Google**

Andrei Broder is a Google Distinguished Scientist. From 2005 to 2012 he was a Fellow and VP for Computational Advertising at Yahoo!. Previous positions include Distinguished Engineer at IBM and VP for Research and Chief Scientist at AltaVista. He was graduated Summa cum Laude from Technion and obtained his M.Sc. and Ph.D. in Computer Science at Stanford under Don Knuth. Broder has authored more than a hundred papers and was awarded forty nine US patents. His current research interests are centered on user understanding, computational advertising, context-driven information supply, and randomized algorithms. He is a member of the US National Academy of Engineering and a Fellow of ACM and of IEEE. Other honors include the ACM Paris Kanellakis Theory and Practice Award and a Honoris Causa doctorate from Technion.

