

EXHIBIT A



Google Focused Research Awards

As part of Google's ongoing commitment to support ambitious research in computer science and engineering, we occasionally support multi-year projects through our Focused Research Awards program. The awards are for research in areas of study that are of key interest to Google as well as the research community. These unrestricted grants are for two to three years, and the recipients have the advantage of access to Google tools, technologies, and expertise.

Unlike our [Faculty Research Awards program](#), we do not accept unsolicited applications for Focused Research Awards. As we continue to identify key areas of research that are of mutual interest to both university researchers and Google, we will provide awards to support these collaborations.

Here are our current and past Focused Award recipients and projects:

Artificial intelligence

- Manuela Veloso and Randy Bryant, Carnegie Mellon University
- Victor Zue, Massachusetts Institute of Technology

Cloud Computing

- Alexander Pretschner, Karlsruhe Institute of Technology

Culturomics

- Erez Lieberman and JB Michel, Harvard University

Energy efficiency in computing

- Ricardo Bianchini, Rutgers; Fred Chong, University of California, Santa Barbara; Thomas F. Wenisch, University of Michigan; Sudhanva Gurumurthi, University of Virginia
- Christos Kozyrakis, Mark Horowitz, Benjamin Lee, Nick McKeown and Mendel Rosenblum, Stanford University
- David G. Andersen and Mor Harchol-Balter, Carnegie Mellon University
- Tajana Simunic Rosing, Steven Swanson and Amin Vahdat, University of California, San Diego
- Thomas F. Wenisch, Trevor Mudge, David Blaauw and Dennis Sylvester, University of Michigan
- Margaret Martonosi, Jennifer Rexford, Michael Freedman and Mung Chiang, Princeton University

Information retrieval, extraction, and organization

- Ed Boyden, Massachusetts Institute of Technology; Nancy Kopell, Boston University
- Gerhard Weikum, Martin Theobald, and Rainer Gemulla, Max Planck Institute for Informatics, Saarbruecken

Machine learning

- William Cohen, Christos Faloutsos, Garth Gibson, and Tom Mitchell, Carnegie Mellon University

Mathematical optimization

- Narendra Jusseim, Ecole des Mines des Nantes; Andrea Lodi, University of Bologna; Pierre Lopez, French National Center for Scientific Research (CNRS); Denis Trystam, Laboratoire d'Informatique de Grenoble; Stefan Nickel, Karlsruhe Institute of Technology; Safia Kedad-Sidhoum, Pierre and Marie Curie University; Leena Suhl, University of Paderborn; Pierre Bonami, Protisvalor Méditerranée; Prof Koch, Zuse Institute Berlin

Mobile

- Gaetano Borriello, University of Washington; Deborah Estrin, University of California, Los Angeles
- Urs Hengartner, Gordon Cormack, Charles Clarke, and Michael Terry, University of Waterloo
- Ramesh Jain, University of California, Irvine
- Michael R. Lyu, Chinese University of Hong Kong
- Gary Chan, Hong Kong University of Science & Technology

- Shiqiang Yang, Tsinghua University
- Maosong Sun, Tsinghua University
- Xiaofeng Meng, Renmin University of China
- Philip S. Yu, University of Illinois at Chicago

Natural language processing

- Andrew McCallum, University of Massachusetts Amherst

Networking

- Nick Feamster and Wenke Lee, Georgia Institute of Technology
- Shaya Fainman, Joe Ford, George Papen, and George Porter, University of California, San Diego

Open standards

- Jack Balkin, Yale University School of Law

Privacy

- Ed Felten, Princeton University
- Lorrie Cranor, Carnegie Mellon University
- Ryan Calo, Stanford University
- Andy Hopper, Cambridge University
- Prof. Kagermann, German Academy of Science and Technology (Acatech)
- Salil Vadhan and Latanya Sweeny, Harvard University Berkman Center

Security

- Stephen Hand and Robert Watson, University of Cambridge
- Dan Boneh and David Mazieres, Stanford University
- Anthony Joseph, Dawn Song, Scott Shenker, Vern Paxson, Doug Tygar, and David Wagner, University of California, Berkeley
- Collin Jackson, Carnegie Mellon University - Cylab
- Nickolai Zeldovich, Frans Kaashoek and Robert Morris, Massachusetts Institute of Technology
- Sean W. Smith, Dartmouth University
- Stefan Savage, Geoffrey M Voelker, and Kirill Levchenko, University of California, San

Diego

Social computing

- Jon Kleinberg, Cornell University
- Zachary Ives, Sudipto Guha, Andreas Haeberlen, Michael Kearns, and Aaron Roth, University of Pennsylvania
- Michael Franklin, Michael Jordan, Ion Stoica, Alex Bayen, Armando Fox, Tim Kraska, Anthony Joseph, Randy Katz, Justin Ma, David Patterson, Purna Sarkar, and Scott Shenker, University of California, Berkeley
- Gary Olson and Judy Olson, University of California, Irvine

Software and hardware systems infrastructure

- George Candea, École Polytechnique Fédérale de Lausanne
- Andreas Zeller and Gordon Fraser, Saarland University, Saarbrücken
- Manfred Broy, Technical University of Munich

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