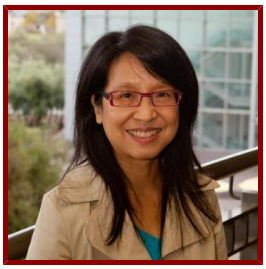
Stanford



Monica Lam

Professor of Computer Science, & by courtesy, of Electrical Engineering

CONTACT INFORMATION

- **Administrative Contact**

  Kathy Robinson - Administrative Associate

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Bio

BIO

Dr. Monica Lam is a Professor in the Computer Science Department at Stanford University, and the Faculty Director of the Stanford MobiSocial Laboratory. Dr. Monica Lam obtained her BS degree in computer science from University of British Columbia, and her PhD degree in computer science from Carnegie Mellon University in 1987. She joined Stanford in 1988.

Professor Lam's research mission is to disrupt the status quo where centralized monopoly platforms are prevalent and consumers privacy is compromised. This challenging problem led her to ten years of research in many disciplines in computer science: natural language processing, machine learning, compilers, distributed systems, and human-computer interaction. She advocates the development of open-source virtual assistants that users can "program" in natural language; these assistants should be federated to give users choice and to support sharing without a centralized third party. Her research prototype demonstrates a viable open-source alternative to the emerging oligopoly of virtual assistants.

Prof. Lam is also an expert in compilers for high-performance machines. Her pioneering work of affine partitioning provides a unifying theory to the field of loop transformations for parallelism and locality. Her software pipelining algorithm is used in commercial systems for instruction level parallelism. Her research team created the first, widely adopted research compiler, SUIF. She is a co-author of the classic compiler textbook, popularly known as the "dragon book".

Dr. Lam is a Member of the National Academy of Engineering and an Association of Computing Machinery (ACM) Fellow.

ACADEMIC APPOINTMENTS

- Professor, Computer Science
- Professor (By courtesy), Electrical Engineering

HONORS AND AWARDS

- Member, National Academy of Engineering (2019)
- Computer Science 50th Anniversary Research Award, University of British Columbia (2018)
- Fellow, ACM (2007)

- SIGSOFT Distinguished Paper Award, ACM (2002)
- Most Influential Programming Language Design and Implementation Paper Award, ACM (2001)
- Young Investigator Award, National Science Foundation (1992)

PROFESSIONAL EDUCATION

- PhD, Carnegie Mellon University , Computer Science (1987)
- MS, Carnegie Mellon University , Computer Science (1982)
- BS (Hons), University of British Columbia , Computer Science (1980)

LINKS

- http://cs.stanford.edu/~lam: http://cs.stanford.edu/~lam

Teaching

COURSES

2019-20

- Program Analysis and Optimizations: CS 243 (Win)
- Research Project in Software Systems and Security: CS 294S (Spr)
- Writing Intensive Research Project in Computer Science: CS 294W (Spr)

2018-19

- Program Analysis and Optimizations: CS 243 (Win)
- Research Project in Software Systems and Security: CS 294S (Spr)
- Writing Intensive Research Project in Computer Science: CS 294W (Spr)

2017-18

- Program Analysis and Optimizations: CS 243 (Win)
- Research Project in Software Systems and Security: CS 294S (Spr)
- Writing Intensive Research Project in Computer Science: CS 294W (Spr)

2016-17

- Program Analysis and Optimizations: CS 243 (Win)
- Research Project in Software Systems and Security: CS 294S (Spr)
- Writing Intensive Research Project in Computer Science: CS 294W (Spr)

STANFORD ADVISEES

Doctoral Dissertation Advisor (AC)

Giovanni Campagna, Michael Fischer, Mehrad Moradshahi

Master's Program Advisor

Tiancheng Cai, Celia Xinuo Chen, Oussama Fadil, Luyao Hou, Wantong Jiang

Doctoral (Program)

Michael Fischer, Silei Xu

Publications

PUBLICATIONS

- **Controlling Fine-Grain Sharing in Natural Language with a Virtual Assistant** *Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT)*
  Campagna, G., Xu, S., Ramesh, R., Fischer, M., Lam, M. S.
  2018

- **Brassau: Automatically Generating Graphical User Interfaces for Virtual Assistants** *20th International Conference on Human-Computer Interaction with Mobile Devices and Services. (MobileHCI)*
  Fischer, M., Campagna, G., Xu, S., Lam, M. S.
  2018

- **Almond: The Architecture of an Open, Crowdsourced, Privacy-Preserving, Programmable Virtual Assistant** *Proceedings of the 26th World Wide Web Conference*
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  2017

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  2012

- **Compilers: Principles, Techniques and Tools.**
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- **Interprocedural parallelization analysis in SUIF** *ACM TRANSACTIONS ON PROGRAMMING LANGUAGES AND SYSTEMS*
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- **Cloning-based context-sensitive pointer alias analysis using binary decision diagrams** *Conference on Programming Language Design and Implementation*
  Whaley, J., Lam, M. S.
  ASSOC COMPUTING MACHINERY.2004: 131–44

- **Software pipelining: An effective scheduling technique for VLIW machines** *ACM SIGPLAN NOTICES*
  Lam, M. S.
  2004; 39 (4): 244-245

- **A data locality optimizing algorithm** *ACM SIGPLAN NOTICES*
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- **Maximizing parallelism and minimizing synchronization with affine partitions** *24th Annual ACM SIGPLAN-SIGACT Symposium on Principles of Programming Languages*
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- **A DATA LOCALITY OPTIMIZING ALGORITHM** *CONF ON PROGRAMMING LANGUAGE : DESIGN AND IMPLEMENTATION*
  Wolf, M. E., Lam, M. S.
  ASSOC COMPUTING MACHINERY.1991: 30–44

- **SociaLite: An Efficient Graph Query Language Based on Datalog** *IEEE TRANSACTIONS ON KNOWLEDGE AND DATA ENGINEERING*
  Seo, J., Guo, S., Lam, M. S.
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- **Dispatch: Secure, Resilient Mobile Reporting** *SIGCOMM Conference*
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  ASSOC COMPUTING MACHINERY.2013: 459–60

- **SociaLite: Datalog Extensions for Efficient Social Network Analysis** *29th IEEE International Conference on Data Engineering (ICDE)*
  Seo, J., Guo, S., Lam, M. S.
  IEEE.2013: 278–289
- **SociaLite: Datalog Extensions for Efficient Social Network Analysis**
  Seo, J., Guo, S., Lam, Monica, S.
  2013
- **Processing Email Archives in Special Collections**
  Hangal, S., Chan, P., Lam, Monica, S., Heer, J.
  2012
- **Effective Browsing and Serendipitous Discovery with an Experience-Infused Browser**
  Hangal, S., Nagpal, A., Lam, Monica, S.
  2012
- **Friends, Romans, Countrymen: Lend me your URLs, Using Social Chatter to Personalize Web Search.**
  Nagpal, A., Hangal, S., Joyee, R. R., Lam, Monica, S.
  2012
- **An Algorithm and Analysis of Social Topologies from Email and Photo Tags**
  Purtell, T., J., MacLean, D., Teh, S. K., Hangal, S., Lam, Monica, S., Heer, J.
  2011
- **Sentiment Analysis on Personal Email Archives**
  Hangal, S., Lam, Monica, S.
  2011
- **Micro-Interactions with NFC-Enabled Mobile Phones**
  Dodson, B., Lam, Monica, S.
  2011
- **Groups Without Tears: Mining Social Topologies from Email.**
  MacLean, D., Hangal, S., Teh, S. K., Lam, Monica, S., Heer, J.
  2011
- **Email Clients as Decentralized Social Apps in Mr. Privacy**
  Fischer, M., Purtell, T., J., Lam, Monica, S.
  2011
- **MUSE: Reviving Memories Using Email Archives**
  Hangal, S., Lam, Monica, S., Heer, J.
  2011
- **Secure, Consumer-Friendly Web Authentication and Payments with a Phone.**
  Dodson, B., Sengupta, D., Boneh, D., Lam, Monica, S.
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  Seong, S., Jiwon, S., Nasielski, M., Sengupta, D., Hangal, S., Teh, S. K., Lam, M. S.
  2010
- **InvisiType: Object-Oriented Security Policies.**
  Seo, J., Lam, Monica, S.
  2010
- **Life-Browsing with a Lifetime of Email.**
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  2010

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  Hangal, S., MacLean, D., Lam, Monica, S., Heer, J.
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- **Towards Software-Friendly Networks**
  Yap, K., Huang, T., Dodson, B., Lam, Monica, S., McKeown, N.
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- **Automatic Dimension Inference and Checking for Object-Oriented Programs** *31st International Conference on Software Engineering (ICSE 2009)*
  Hangal, S., Lam, M. S.
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- **Automatic Inference of Stationary Fields: a Generalization of Java's Final Fields** *35th ACM-SIGPLAN-SIGACT Symposium on Principles of Programming Languages*
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  Martin, M., C., Lam, M., S.
  2008
- **Securing Web Applications Using Static and Dynamic Information Flow Tracking**
  Lam, M., S., Martin, M., C., Livshits, V., B., Whaley, J.
  2008
- **Securing Web Applications with Static and Dynamic Information Flow Tracking** *ACM SIGPLAN Symposium on Partial Evaluation and Semantics-Based Program Manipulation*
  Lam, M. S., Martin, M., Livshits, B., Whaley, J.
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  Heine, D., Lam, M., S.
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  Nieh, J., Lam, M. S.
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- **Challenges and new approaches to program analysis** *12th International Conference on Parallel Architectures and Compilation Techniques (PACT 2003)*
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- **Virtual Appliances in the Collective: A Road to Hassle-free Computing**
  Sapuntzakis, C., P., Lam, M., S.
  2003
- **Tracking Pointers with Path and Context Sensitivity for Bug Detection in C Programs**
  Livshits, V., B., Lam, M., S.
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- **Virtual appliances for deploying and maintaining software** *17th Large Installation Systems Administration Conference*
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  Sapuntzakis, C. P., Chandra, R., Pfaff, B., Chow, J., Lam, M. S., Rosenblum, M.
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  1999
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  Lim, A., W., Cheong, G., I., Lam, M., S.
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- **In Search of Speculative Thread-Level Parallelism**
  Oplinger, J., T., Heine, D., L., Lam, M., S.
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- **The Interactive Performance of SLIM: a Stateless, Thin-Client Architecture**
  Schmidt, B., Lam, M., S., Northcutt, J., D.
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- **SMART UNIX SVR4 support for multimedia applications** *IEEE International Conference on Multimedia Computing and Systems 97*
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  Nieh, J., Lam, M., S.
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- **Maximizing Parallelism and Minimizing Synchronization with Affine Transforms**
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- **The Design, Implementation and Evaluation of SMART: a Scheduler for Multimedia Applications**
  Nieh, J., Lam, M., S.
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- **Software and Hardware for Exploiting Speculative Parallelism with a Multiprocessor** *Technical Report CSL-TR-97-715, Stanford University*
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- **A Fully Interprocedural System for Automatic Parallelization**
  Hall, M., W., Amarasinghe, S., P., Murphy, B., R., Liao, S., W., Lam, M., S.
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  Tseng, C., W., Anderson, J., M., Amarasinghe, S., P., Lam, M., S.
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  Amarasinghe, S., P., Anderson, J., M., Lam, M., S., Lim, A., W.
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- **Communication-Free Parallelization via Affine Transformations**
  Lim, A., W., Lam, M., S.
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