Pramod Kaushik Mudrakarta

Software Engineer, Google Research
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Professional Experience

Google Research, Mountain View, USA — Nov 2019 – present
Software Engineer (full-time)

The University of Chicago, Chicago, USA — Sep 2014 – Aug 2019
Teaching Assistant

Google Research, Mountain View, USA — Jun – Sep 2018 & Jun – Sep 2017
Software Engineering Intern

Amazon.com, Seattle, USA — Jun – Sep 2016
Applied Scientist Intern

Max-Planck Institute, Tübingen, Germany — 2009 – 2011 & May – Jul 2008
Scientist, Research Assistant & Summer Intern
Advisor: Prof. Gunnar Rätsch *(now at ETH Zürich, Switzerland)*

Education

The University of Chicago, Chicago, USA — 2014 – 2019
Ph.D. in Computer Science
Adviser: Prof. Risi Kondor
Thesis: Challenges in Machine Learning: Multiresolution Structure, Model Understanding and Transfer Learning

Saarland University, Saarbrücken, Germany — 2012 – 2014
M.Sc. in Computer Science
Adviser: Prof. Matthias Hein
Thesis: Minimization of k-way balanced graph cuts with applications to clustering

Indian Institute of Technology Bombay, Mumbai, India — 2005 – 2009
B.Tech. in Computer Science and Engineering
Adviser: Prof. Sundar Vishwanathan
Thesis: Flowshop scheduling

Publications

Pramod Kaushik Mudrakarta, Shubhendu Trivedi, and Risi Kondor (2019). **Asymmetric Multiresolution Matrix Factorization**. *arXiv preprint arXiv:1910.05132*

Pramod Kaushik Mudrakarta, Mark Sandler, Andrey Zhmoginov, and Andrew Howard (2019). **K For The Price Of 1: Parameter Efficient Multi-task And Transfer Learning**. *International Conference on Learning Representations*

Pramod Kaushik Mudrakarta, Ankur Taly, Mukund Sundararajan, and Kedar Dhamdhere (2018a). **Did the model understand the question?** *Proceedings of the 56th Annual Meeting on Association for Computational Linguistics*

Pramod Kaushik Mudrakarta, Ankur Taly, Mukund Sundararajan, and Kedar Dhamdhere (2018b). **It was the training data pruning too!** *arXiv preprint arXiv:1803.04579*

Pramod Kaushik Mudrakarta and Risi Kondor (2017). **A generic multiresolution preconditioner for sparse symmetric systems**. *arXiv preprint arXiv:1707.02054*

Nedelina Teneva, Pramod Kaushik Mudrakarta, and Risi Kondor (2016). **Multiresolution Matrix Compression**. *Proceedings of the Nineteenth International Conference on Artificial Intelligence and Statistics*
Winner of a **notable student paper award** (given to top 3 papers)

Risi Kondor, Nedelina Teneva, and Pramod Kaushik Mudrakarta (2015). **Parallel MMF: a Multiresolution Approach to Matrix Computation**. *arXiv preprint arXiv:1507.04396*

Syama Sundar Rangapuram, Pramod Kaushik Mudrakarta, and Matthias Hein (2014). **Tight continuous relaxation of the balanced k-cut problem**. *Advances in Neural Information Processing Systems*, pp. 3131–3139

Vipin T Sreedharan, Sebastian J Schultheiss, Géraldine Jean, André Kahles, Regina Bohnert, Philipp Drewe, Pramod Kaushik Mudrakarta, Nico Görnitz, Georg Zeller, and Gunnar Rätsch (2014). **Oqtans: the RNA-seq workbench in the cloud for complete and reproducible quantitative transcriptome analysis**. *Bioinformatics*, btt731

Georg Zeller, Nico Görnitz, Andre Kahles, Jonas Behr, Pramod Kaushik Mudrakarta, Sören Sonnenburg, and Gunnar Rätsch (2013). **mTim: rapid and accurate transcript reconstruction from RNA-Seq data**. *arXiv preprint arXiv:1309.5211*

Presentations and Talks

- Analyzing Deep Learning Models for Question-Answering
  Midwest Speech and Language Days, Notre-Dame, USA 2018
- Multiresolution Matrix Factorization
  Amazon HQ, Seattle, USA 2016
- Parallel Multiresolution Matrix Factorization
  CERES "Unstoppable Computing" Research Summit, Chicago, USA 2016
  Neural Information Processing Systems (Demonstration), Montrèal, Canada 2015

Academic reviewing

AAAI 2017, NIPS 2018, ICLR 2019

Opensource Contributions

pMMF: A high-performance parallel Multiresolution Matrix Factorization library in C++ (with Nedelina Teneva and Risi Kondor).
Available at http://people.cs.uchicago.edu/~risi/MMF

Balanced Graph Clustering: MATLAB/C++ library for computing a k-way clustering of a graph via balanced cuts for unsupervised and transductive cases (with Syama Sundar Rangapuram and Matthias Hein).
Available at http://www.ml.uni-saarland.de/code/balancedKCuts/balancedKCuts.zip

Hidden Markov SVMs: MATLAB/C++ library implementing Hidden Markov Support Vector Machines (with Georg Zeller and Gunnar Rätsch).
Available at http://mloss.org/software/view/250/

Awards

- University Unrestricted (UU) research fellowship 2016
- Notable student paper award, AISTATS 2016
- Travel grant, Graduate Council, The University of Chicago 2015
- Travel grant, Neural Information Processing Systems (NIPS) Foundation 2014
- Fellowship, Graduate School of Computer Science, Saarland University 2012–2014
- Best project prize, Databases and Information Systems course, IIT Bombay 2007
- All-India-Rank 45 (among ∼300,000) in the joint entrance exam to the IITs 2005

Teaching Experience

Machine Learning: 4 courses at 2 universities, including one with focus on large-scale data analysis using Amazon AWS and Apache Spark. Designed homeworks, held tutorial sessions, reviewed exams, provided one-on-one support to students

Introductory Computer Science: 3 courses at the University of Chicago. Conducted lab sessions, graded homeworks and exams, helped design homeworks. Course content included object-oriented and functional programming, and homeworks inspired from various fields of science

Conferences Attended

- Neural Information Processing Systems (NIPS) 2016 & 2015
- Prospects in Applied Mathematics 2014
- Max Planck Advanced Course on the Foundations of Computer Science 2013 & 2012

Relevant Courses (Grade)

Algorithms (A)	Machine Learning (A)
Convex Optimization (A)	Image Processing and Computer Vision (A)
Modern Signal Processing (audit)	Databases and Information Systems (A)
Programming Paradigms (A)	Software Engineering (A)

Skills

- Programming: C/C++, Python, Java, MATLAB, Lisp
- Libraries & Tools: TensorFlow, Theano, Amazon AWS, Apache Spark, LAPACK, Git
- Typesetting: LaTeX, Beamer, Microsoft PowerPoint

Languages

- English (native/bilingual)
- Telugu (native/bilingual)
- German (fluent)
- Hindi (fluent)

Leadership and Service

- Mentor, IMPACT program, The University of Chicago, USA
  - Facilitated the transition of two incoming international PhD students
  - Provided academic and non-academic guidance in order to ease the adjustment process
- Judge, University of Chicago Undergraduate STEM Symposium 2016
- Judge, Illinois Louis Stokes alliance for minority participation symposium 2016, USA
  - Evaluated presentations on technical content and clarity and provided feedback
  - Assisted in choosing the prize winners
- Elected positions in student housing councils

  Saarland University, Germany:
  - Actively participated in monthly meetings aimed at improving student life
  - Organized orientations and social events for new students

  IIT Bombay, India:
  - Conducted an orientation program for new students
  - Designed and developed software to make elections in the campus efficient
- Inter-cultural activities, Saarland University, Germany
  - Organized an Indian culinary event "Spezialitätentag"
  - Composed German and English language brochures on Indian culture