MARINA KNITTEL

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RESEARCH INTERESTS

I study graph algorithms for big data. My current projects focus on distributed models for hierarchical clustering and classical graph problems. I am also working on approximation algorithms for planar versions of NP-hard problems and variants of the stable marriage problem.

EDUCATION

University of Maryland, College Park — College Park, MD
PhD in Computer Science, 3.87 GPA — *Expected: May 2023*

Advisor: Prof. MohammadTaghi Hajiaghayi
Coursework: Approximation Algorithms, Quantum Information Theory, Algorithms in Machine Learning (IP), Algorithmic Lower Bounds (IP), Computational Genomics (IP) IP = In Progress

Harvey Mudd College — Claremont, CA
B.S. in Computer Science and Mathematics, 3.75 GPA — *May 2018*

Advanced Coursework: Advanced Algorithms, Computational Complexity, Graph Theory, Convex Set Theory, Machine Learning, Artificial Intelligence, Logic, Advanced Linear Algebra

HONORS AND AWARDS

University of Maryland	Summer Dean's Fellow	2019
	Dean's Fellow	2018-2020
Harvey Mudd College	Class of '94 Award	2018
	High Distinction	2018
	Honors in Computer Science	2018
	Honors in Mathematics	2018
	Dean's List	2015-2018
Palo Alto High School	Sandra Forsythe Memorial Scholarship	2014

PUBLICATIONS

Conference:

1. Jordan R. Abrahams, David A. Chu, Grace Diehl, Marina Knittel, Judy Lin, William Lloyd, James C. Boerkoel Jr., and Jeremy Frank, "DREAM: An Algorithm for Mitigating the Overhead of Robust Rescheduling". The 29th International Conference on Automated Planning and Scheduling (ICAPS), 2019.

2. Hoaxing Du, Yi Sheng Ong, Marina Knittel, Ross Mawhorter, Ivy Liu, Gianluca Gross, Reiko Tojo, Ran Libeskind-Hadas and Yi-Chieh Wu, "Multiple Optimal Reconciliations with Gene Duplication, Loss, and Coalescence". 17th Asia Pacific Bioinformatics Conference (APBC), 2019.

Workshop:

1. David A. Chu, Grace Diehl, Marina Knittel, Liam Lloyd, James C. Boerkoel Jr., and Jeremy Frank, "Trade-offs Between Communication, Rescheduling, and Success Rate in Uncertain Multi-Agent Schedules". The Integrated Planning, Acting and Execution Workshop (IntEx) at The 28th International Conference on Automated Planning and Scheduling (ICAPS), 32-40, 2018.

RESEARCH EXPERIENCE

NASA Ames & Harvey Mudd College August 2017 - June 2018
Senior Capstone Project Manager and Member *Claremont, CA*

- Led a team of 5 in a research-based project in scheduling algorithms
- Researched new methods for optimizing multi-agent system rescheduling with limited communication
- Theoretically and experimentally verified effect of communication on success

Harvey Mudd College August 2016 - May 2018
Researcher in Computational Biology *Claremont, CA*

- Developed a new algorithm for fast and effective reconciliation for non-binary phylogenetic trees
- Proved various mathematical properties of a data structure used in phylogenetic reconciliation research
- Analyzed effectiveness of the binary phylogenetic tree reconciliation algorithm

Rutgers University May 2017 - August 2017
Researcher in Theoretical Computer Science *Piscataway, New Jersey*

- Summer 2017 NSF-funded REU position under Professor Eric Allender at DIMACS
- Studied the Minimum Circuit Size Problem, Kolmogorov Random Strings and the Polynomial Hierarchy
- Modified the Turing machine to produce a hierarchy almost isomorphic to the Polynomial Hierarchy

Harvey Mudd College June 2015 - May 2016
Researcher in Web Development *Claremont, California*

- Improved a research websites appeal and functionality (HTML, CSS, Javascript, PHP and Drupal)
- Trained new researchers in web development and coding practices to join the web development team

WORK EXPERIENCE

Facebook, Inc. May 2018 - August 2018
Software Engineering Intern *Menlo Park, CA*

- Developed, trained, and tuned new neural network models for suggesting Instagram accounts to follow
- Incorporated handling for sparsed, crossed, and bucketized features in the training pipeline

Bloomberg LP May 2016 - July 2016
Software Engineering Intern *New York City, NY*

- Built a service to assume a front end process and lighten client machine processing load
- Gained a deeper understanding of computer systems, C++, and elegant and adaptable coding practices

Napses May 2014 - August 2014
Web Development Intern *Santa Barbara, CA*

- Programmed a blog in JavaScript (jQuery), HTML, and CSS, using Bootstrap for a start-up

TEACHING EXPERIENCE

Teaching Assistant September 2018 - Now
University of Maryland, College Park *College Park, MD*

- Courses: Discrete Structures
- Responsibilities: Lead recitations, hold tutoring hours, grade tests

Grader and Tutor January 2015 - May 2018
Harvey Mudd College *Claremont, CA*

- Courses: Algorithms, Computational Complexity, Machine Learning, Data Structures & Program Development, Introductury Computer Science, Multivariable Calculus
- Responsibilities: Hold tutoring hours, grade homeworks

Homework Hotline Tutor September 2014 - December 2016
Harvey Mudd College *Claremont, CA*

- Courses: topics in K-12 education
- Responsibilities: provide free over-the-phone tutoring for K-12 students

SERVICE AND LEADERSHIP

External	Algorithmica Reviewer	2019
University of Maryland	CATS Theory Lecture Organizer	2019 - Now
	Executive Committee Member	2018 - Now
	CS Women Mentor	2018 - Now
Harvey Mudd College	Committee for Activities Planning Member	2017 - 2018
	LGBT+ Club Mentor	2017 - 2018
	Women in Math Club President	2017 - 2018
	Dorm President	2016 - 2017
	Dorm Treasurer	2015 - 2016