

ISAAC GROSOFF

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RESEARCH INTERESTS

Design and performance analysis of stochastic computer systems, including theory and implementation.
Queueing behavior and scheduling policies for resource allocation, especially in multicore systems.

CURRENT RESEARCH

Multiserver scheduling policies, scheduling policies for tail metrics.

EDUCATION

2017 - pres: Pursuing PhD in Computer Science. Carnegie Mellon University, Pittsburgh, PA.
Advisor: Prof. Mor Harchol-Balter

2013 - 2017: M.E. and B.S. in Computer Science. Massachusetts Institute of Technology, Cambridge, MA. GPA 4.96/5
Master's Thesis in information-theoretic cryptography: "Secure communication: CDS, PIR, PSM"
Master's Advisor: Prof. Vinod Vaikunathanathan
Bachelor's Advisor: Prof. Frans Kaashoek

REFEREED PUBLICATIONS

Isaac Grosof, Kunhe Yang, Ziv Scully, Mor Harchol-Balter. "Nudge: Stochastically improving upon FCFS." *Proceedings of the ACM Measurement and Analysis of Computer Systems – SIGMETRICS: Volume 5, Number 2, Article 99 (2021)*, pp. 99:1 – 99:25, June 2021, Beijing, China.

Ziv Scully, Isaac Grosof and Mor Harchol-Balter. "The Gittins Policy is Nearly Optimal in the M/G/k under Extremely General Conditions." *Proceedings of the ACM Measurement and Analysis of Computer Systems – SIGMETRICS: Volume 4, Number 3, Article 43 (Dec 2020)*, pp. 43:1 – 43:29, June 2021, Beijing, China.

Ziv Scully, Isaac Grosof, Mor Harchol-Balter. "Optimal Multiserver Scheduling with Unknown Job Sizes in Heavy Traffic." *38th International Symposium on Computer Performance, Modeling, Measurements, and Evaluation (Performance 2020)*, Milan, Italy, November 2020.

Ben Berg, Daniel Berger, Sara McAllister, Isaac Grosof, Sathya Gunasekar, Jimmy Lu, Michael Uhlar, Jim Carrig, Nathan Beckmann, Mor Harchol-Balter, Greg Ganger. "The CacheLib Caching Engine: Design and Experiences at Scale." 14th USENIX Symposium on Operating Systems Design and Implementation (OSDI 2020), Banff, Canada, November 2020.

Isaac Grosof, Ziv Scully, Mor Harchol-Balter. "Load Balancing Guardrails: Keeping Your Heavy Traffic on the Road to Low Response Times." *Proceedings of the ACM Measurement and Analysis of Computer Systems – SIGMETRICS: Volume 3, Issue 2, Article 42 (June 2019)*, pp. 42:1 – 42:31, 2019.

Conference version appeared in *Proceedings of ACM Simetrics/Performance 2019 Conference on Measurement and Modeling of Computer Systems (SIGMETRICS 19)*, Pheonix, AZ. June 2019.

Winner of SIGMETRICS 2019 Best Student Paper Award.

Isaac Grosof, Ziv Scully, Mor Harchol-Balter. "SRPT for Multiserver Systems." *Performance Evaluation*, vol. 127-128, Nov. 2018, pp. 154-175.

Conference version appeared in *36th International Symposium on Computer Performance, Modeling, Measurements, and Evaluation (Performance 2018)*, Toulouse, France, December 2018.

Winner of Performance 2018 Best Student Paper Award.

Erik D. Demaine, Isaac Grosof, Jayson Lynch, and Mikhail Rudoy. "Computational Complexity of Motion Planning of a Robot through Simple Gadgets." *Ninth International Conference on Fun with Algorithms*. La Maddalena, Italy. 2018.

Erik D. Demaine, Isaac Grosf, and Jayson Lynch. “Push-Pull Block Puzzles are Hard.” *International Conference on Algorithms and Complexity*. Athens, Greece. 2017.

Benjamin Grosf, Janine Bloomfield, Paul Fodor, Michael Kifer, Isaac Grosf, Miguel Calejo, and Theresa Swift. “Automated Decision Support for Financial Regulatory/Policy Compliance, using Textual Rulelog.” *RuleML 2015*. Berlin, Germany. 2015.

OTHER PUBLICATIONS

Isaac Grosf. “Open Problem - M/G/k/SRPT Under Medium Load.” *Stochastic Systems*. Sep. 2019.

EMPLOYMENT

Summer 2019: Facebook, Menlo Park, CA.

- Research Intern to develop a machine-learning-based SSD admission policy for Facebook’s Tao caching architecture.
- Improved the tradeoff between hit ratio and SSD write rate.

Summer 2018: Microsoft Research, Seattle, WA.

- Research Intern to develop novel FPGA algorithms for linear algebra and solving linear programs.

Summer 2016: Jane Street Capital, LLC, New York City, NY.

- Software developer for non-obtrusive data collection about in-house trading.
- Software developer responsible for updating trading simulation package to accommodate new trade specification format.

Summer 2015: Coherent Knowledge, Seattle, WA.

- Knowledge Engineer to build demonstrations for the financial and natural language domains using the declarative logic programming language Ergo.

2013 - 2014: MIT Undergraduate Research Opportunities Program, Cambridge, MA.

- Researcher in Complexity Theory proving computational hardness of block puzzles and related agent motion problems.

Summer 2014: EMC Isilon, Seattle, WA.

- Software developer to replace the previous ad-hoc build platform with a modern Jenkins-based build platform.

PROJECTS

2014 - pres: Author of new programming language: *Pyth*

- Pyth is one of the best programming languages for solving tasks with the shortest possible programs.
- Pyth is an open-source language written in Python which has an online interpreter and detailed documentation.
- Available at <https://github.com/isaacg1/pyth>