

EDUCATION

- Carnegie Mellon University Aug 2015 - Sep 2020
Ph.D. in Computer Science (ACO), Thesis: *Coding for Synchronization Errors* (Advisor: B. Haeupler)
M.Sc. in Algorithms, Combinatorics, and Optimization
- Sharif University of Technology 2010-2015
B.Sc. in Computer Science, **1st in class**, Thesis: *Critical Graphs in Index Coding* (Advisor: A. Gohari)
B.Sc. in Electrical Engineering (Digital Systems)

PROFESSIONAL EXPERIENCE

- Harvard University**, Post-Doctoral Fellow (Supervisor: Madhu Sudan) Starting Nov 2020
Supported through NSF-funded *CRA/CCC Computing Innovation Fellowship*
- Microsoft Research**, Intern, DNA Data Storage Group (Supervisor: Sergey Yekhanin) Summer 2019
Project: *Developing and implementing an enhanced trace reconstruction component for Microsoft's DNA data storage decoder by utilizing DNA sequencer's quality scores. We have applied for patent rights.*
- Carnegie Mellon University**, Research Assistant (Supervisor: Mor Harchol-Balter) Fall 2015
Project: *Caching Algorithms for Variable Object Sizes*
- EPFL**, Intern, Theory Group (Supervisor: Ola Svensson) Summer 2014
Project: *Designing LP-based approximation algorithms for k -capacitated facility location problem*

PUBLICATIONS (Details available on my Google Scholar page)

- Optimally Resilient Codes for List-Decoding from Insertions and Deletions¹
Guruswami, Haeupler, and Shahrabi, Symposium on Theory of Computing (**STOC**), 2020
- Near-Linear Time Insertion-Deletion Codes and $(1+\epsilon)$ -Approximating Edit Distance via Indexing¹
Haeupler, Rubinfeld, and Shahrabi, Symposium on Theory of Computing (**STOC**), 2019
- Synchronization Strings: Efficient and Fast Deterministic Constructions over Small Alphabets¹
Cheng, Haeupler, Li, Shahrabi, and Wu, Symposium on Discrete Algorithms (**SODA**), 2019
- Synchronization Strings: Explicit Constructions, Local Decoding, and Applications¹
Haeupler and Shahrabi, Symposium on Theory of Computing (**STOC**), 2018
- Synchronization Strings: List Decoding for Insertions and Deletions¹
Haeupler, Shahrabi, and Sudan, Colloq. on Automata, Languages, and Programming (**ICALP**), 2018
- Synchronization Strings: Channel Simulations and Interactive Coding for Insertions and Deletions¹
Haeupler, Shahrabi, and Vitercik, Colloq. on Automata, Languages, and Programming (**ICALP**), 2018
- Synchronization Strings: Codes for Insertions and Deletions Approaching the Singleton Bound¹
Haeupler and Shahrabi, Symposium on Theory of Computing (**STOC**), 2017
Invited to the Theory of Computation (ToC) journal
- Critical Graphs in Index Coding
Tahmasbi, Shahrabi, and Gohari, IEEE International Symposium on Information Theory (**ISIT**), 2014
and *IEEE Journal on Selected Areas in Communications (J-SAC)*, 2015
- Synchronization Strings and Codes for Insertions and Deletions – a Survey¹
Haeupler and Shahrabi, **Invited to IEEE Transactions on Information Theory (ITIT)**

U.S. PATENTS

- Trace Reconstruction of Polymer Sequences Using Quality Scores, *filing by Microsoft Tech Licensing*, 2019.

HONORS AND AWARDS

- Recipient of NSF-funded CRA/CCC Computing Innovations Fellowship, 2020.
- **Invited speaker** at Highlights Session of *Symposium on Combinatorial Pattern Matching*, 2020.
- **Invited to publish** an expository paper on synchronization strings in *Special Issue of the IEEE Transactions on Information Theory Honoring V. I. Levenshtein*, 2019.

¹ Authors' names appear in alphabetical order.

- **Invited to publish** my paper on synchronization strings in the *Theory of Computing* journal, 2017.
- **Invited speaker** at *Harvard Workshop on Coding and Information Theory*, 2018.
- **Gold medalist** of 18th Iranian National Olympiad in Informatics (INOI), 2009.
- Ranked 1st among the 2015 computer science class, Sharif University of Technology, 2015.
- Outstanding Scientific and Cultural Efforts Award, Sharif University, 2011.
- Recipient of Iranian National Elites Foundation Grant, 2010-2014.

PEER REVIEW

- IEEE Symposium on Foundations of Computer Science (FOCS), 2020.
- ACM Symposium on Theory of Computing (STOC), 2019 and 2020.
- ACM-SIAM Symposium on Discrete Algorithms (SODA), 2019 and 2020.
- International Colloquium on Automata, Languages and Programming (ICALP), 2019.
- Innovations in Theoretical Computer Science (ITCS), 2019.
- European Symposia on Algorithms (ESA), 2019.
- SIAM Journal on Discrete Mathematics (SIDMA), 2019.
- IEEE Transactions on Information Theory (ITIT), 2017, 2018, and 2020.
- IEEE Transactions on Communications (ITC), 2019.
- IEEE International Symposium on Information Theory (ISIT), 2015 and 2018.

INVITED TALKS

- Coding for Synchronization Errors, *Bar-Ilan University*, 2020.
- Synchronization Strings, *Information Theory and Applications Workshop*, 2020.
- Synchronization Strings, *Harvard Workshop on Coding and Information Theory*, 2018.
- Synchronization Strings: Communication in the Presence of Insertions and Deletions, *CMU*, 2018.
- Synchronization Strings, *Johns Hopkins University*, 2017.
- Synchronization Strings, *University of Maryland*, 2017.
- Analysis of Caching under Variable Object Sizes, *CMU*, 2015.
- LP-Based Approximation Algorithms for k -Capacitated Facility Location Problem, *EPFL*, 2014.
- Critical Graphs in Index Coding, *Sharif University of Technology*, 2014.

TEACHING EXPERIENCE

Teaching Assistant

CMU	Graduate Algorithms, Algorithms & Advanced Data Structures
Sharif	Advanced Programming, Designing Algorithms (2x), Introduction to Cryptography (2x), Introduction to Probability and Statistics, Logic Circuits and Digital Systems (2x)

Math/Programming Teacher

2009-2010

I served as a math/programming teacher in IOI training programs in several Iranian high schools and Iranian National Olympiad in Informatics (INOI) training camp.

TECHNICAL SKILLS

<i>Programming</i>	C++ (Proficient), Python, MATLAB (Familiar), Java, JS, PHP (Older Course Projects)
<i>Tools & OS</i>	Ubuntu (Moderate), Android SDK, Mathematica, OpenGL (Older Course Projects)

TECHNICAL PROJECTS

- Android Phone Tracking App [*Android SDK, Java*]
- Online Multi-player Checkers Game [*Java, JSP, Apache Tomcat*]
- Highly-Parallel Statistical Wildlife Simulation [*Java, RMI*]
- Design and Implementation of a GPS Car Tracking Device [*AVR micro-controller, C++, Altium*]
- Design and Implementation of a Maze Solver Robot [*ARM Cortex-M3, Keil μ vision, C++*]
- Implementation of Reversi game on an Altera DE-2 Board [*Altera DE-2, C++*]
- Design and Implementation of a Room Mapping Robot [*AVR micro-controller, C++, Altium*]

REFERENCES

Bernhard Haeupler

Associate Professor
Carnegie Mellon University
Pittsburgh, PA, USA
haeupler@cs.cmu.edu

Venkatesan Guruswami

Professor
Carnegie Mellon University
Pittsburgh, PA, USA
venkatg@cs.cmu.edu

Madhu Sudan

Professor
Harvard University
Cambridge, MA, USA
madhu@cs.harvard.edu

Sergey Yekhanin

Sr Principal Researcher
Microsoft Research
Redmond, WA, USA
yekhanin@microsoft.com