Hossein Baktash

Curriculum Vitae

Education

2021 – now **Ph.D. in Electrical and Computer Engineering**, *Carnegie Melon University*, Pittsburgh, PA, *advisor:* Prof. Keenan Crane.

2015–2020 **B.Sc. in Computer Engineering**, *Sharif University of Technology*, Tehran, Iran, *GPA: 17.01/20*.

- *Minor in Mathematics*: Graph Theory, Analysis, Advanced Linear Algebra, Group Theory

2014–2015 **Team selection camp for International Mathematical Olympiad**, *Young Scholars Club*, Tehran, Iran.

- *Special topics*: Analysis, Linear Algebra, Dynamical Systems, Algebra (Galois theory)

2011–2014 **Diploma in Mathematics and Physics Discipline**, *Shahid Soltani High school (NODET)*, Karaj, Iran,
GPA: 18.49/20.

Publications

Computational Imaging using Ultrasonically-Sculpted Virtual Lenses
Hossein Baktash, Yash Belhe, Matteo Giuseppe Scopelliti, Yi Hua, Aswin Sankaranarayanan, Maysam Chamanzar
IEEE Intl. Conf. Computational Photography (ICCP), 2022.

Some Results on Dominating Induced Matching
S. Akbari, A. Bahjati, H. Baktash, A. Behmaram, M. Roghani
Graphs and Combinatorics, 2022.

Awards and Honors

2021 **Carnegie Institute of Technology Dean's Fellowship**, *Carnegie Melon University*.

2014 **Iranian National Mathematics Olympiad**, ***Gold medal***, Young Scholars Club, Tehran(Iran).

Research Experience

2021–2022 **Research Assistant**, *Chamanzar Lab*, Carnegie Mellon University.
Developed an image processing pipeline to relay and deblur images using unconventional ultrasonic lenses in water.

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2019–2020 **Bachelor Thesis**, *Sharif University of Technology, Tehran*.
Worked on the problem of recovering the structure of Ising Blockmodels with more than two blocks. Developed a variant of the max-cut SDP relaxation and improved the immediate sample complexity of $\mathcal{O}(n^2 \log(n))$ to the information theoretic lower bound of $\mathcal{O}(n \log(n))$.

summer 2019 **Research Internship**, *INRIA - I3S Laboratoire, France*.
Studied several state-of-the-art pruning and hashing methods to compress neural networks including HashedNet, OBD, and magnitude-based pruning with l1 and l2 regularization methods. I experimentally showed that iterative pruning methods are more robust than HashedNet and outperform other methods.

Talks

Computational Imaging using Ultrasonic Lenses
ICCP 2022, Caltech, Pasadena, CA

Teaching Experiences

Teaching Assistant.
- CMU: Discrete Differential Geometry
- SUT: Linear Algebra, Probability and Statistics, Theory of Languages and Automata

Tutoring.
- Geometry, Combinatorics, Number Theory for Math/Informatics Olympiad participants

skills

programming **Python**, **C++**, MATLAB, C, Java
Tools Docker, Slurm, AWS, Git, Geogebra
Experimental Prototyping imaging setups on an optical table
Languages Persian, English, Azeri

Additional Activities

Sports Mountaineering, Snooker/Pool
Hobbies Drawing, Cooking
Executive experience
- **Member of Sharif University's Mountaineering Group** (2016–2020)
  Assigned as team leader several times and successfully carried out the responsibilities, which often involved leading a team of 20-30 members in nature, outdoors, and remote regions of the country.
- **Team guide in IOI 2017 (International Olympiad in Informatics)**
  I was honored to be the guide of team Latvia in the competition. Providing real-time translation and helping the team enjoy their one-week stay in Tehran.