

# Hossein Baktash

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## Curriculum Vitae

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### Education

- 2021 – now **Ph.D. in Electrical and Computer Engineering**, *Carnegie Mellon 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.

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### 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.

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### Awards and Honors

- 2021 **Carnegie Institute of Technology Dean's Fellowship**, *Carnegie Mellon University*.
- 2014 **Iranian National Mathematics Olympiad, Gold medal**, Young Scholars Club, Tehran, Iran.

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### 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.

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.