Amin Ghafari

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SKILLS AND EXPERTISE

- Computational Modeling and Simulation of statistical and thermal physics problems with Python and MATLAB
- Designing deep learning and classical machine learning algorithms for computer vision and reinforcement learning
- Have a broad knowledge of nanoscale heat transfer theory, statistical and thermal physics
- Performed fundamental research on Photonics and Phononics
- Technical Skills: Python, C++, C#, MATLAB, ANSYS, COMSOL, TensorFlow, Linux, Scipy, Numpy, Git, Unity, AWS

EDUCATION

University of California Berkeley,   **Berkeley, CA**
- **Ph.D.** in Mechanical Eng., Minors in Physics and Mathematics, [GPA: 4.0/4.0]   2014-August 2020
- **M.Sc.** in Mechanical Eng., [GPA: 4.0/4.0]   2017

Sharif University of Technology,   **Tehran, Iran**
- **B.Sc.** in Mechanical Eng., [GPA: 3.99/4.0]   2010-2014

EXPERIENCE

UC Berkeley   **Berkeley, CA**

Graduate Student Researcher, Mechanical Engineering Department   August 2014 - August 2020
- Contributed to the development of nanoscale heat transfer theory and removed fundamental errors posed by previous theories which were based on equilibrium thermodynamics and fluctuation-dissipation theorem
- Developed novel algorithms for fast and efficient modeling of intense radiation an conduction problems in nanoscale
- Simulated and investigated the nanoscale heat transfer phenomena in multilayered nanostructures via MATLAB

Graduate Student Instructor, Computer Science Department
- Teaching Assistance, Discrete Mathematics and Probability Theory   August 2019-May 2020
- Lecturer, Discrete Mathematics and Probability Theory   Summer 2020

President/Lead Organizer and Financial Director   2018-2019
- Iranian Student Association in America at UC Berkeley, a none-profit organization,

PROJECTS

Deep Inverse Reinforcement Learning, [Link]   Deep RL, Prof. Sergey Levine, UC Berkeley
- Developed reinforcement learning algorithms to reduce human's burden for training an agent performing specific tasks using TensorFlow which made the learning 2X faster
- Designed Neural Networks architectures and applied machine learning techniques to strengthen the RL algorithms

Realistic Rendering of Ice cubes, [Link]   Computer Graphics, Prof Ren NG, UC Berkeley
- Devised an optical model for ice texture. Used Monte Carlo integration method to capture light rays efficiently.
- Implemented a path tracing code to render various ice topologies using C++.

HONORS AND AWARDS

- The Graduate Division Nano Block Grant Award,   UC Berkeley2018
- Otto and Herta F. Kornei Endowment Fellowship,   UC Berkeley, 2017
- The Graduate Division Block Grant Award,   UC Berkeley, 2015, 2017, 2019

PUBLICATIONS

- Ma, Y.*, **Ghafari, A.***, Wu, Y., & Bogy, D. (2020). A study of the nanoscale heat transfer in the hdd head-disk interface based on a static touchdown experiment. **IEEE Transactions on Magnetics,** (* equally contributed.)
- Sakhalkar, S., Cheng, Q., **Ghafari,** A., Ma, Y., & Bogy, D. (2019). Numerical and experimental investigation of heat transfer across a nanoscale gap between a magnetic recording head and various media. **APL**, 115(22), 223102.
- Ma, Y., **Ghafari, A.**, Budaev, B. V., & Bogy, D. B. (2017). Measurement and simulation of nanoscale gap heat transfer using a read/write head with a contact sensor. **IEEE Transactions on Magnetics**, 53(2), 1-5.
- Ma, Y., **Ghafari, A**., Budaev, B. V., & Bogy, D. B. (2016). Controlled heat flux measurement across a closing nanoscale gap and its comparison to theory. **APL** 108(21), 213105.
- Budaev, B. V., **Ghafari, A.**, & Bogy, D. B. (2016). Intense radiative heat transport across a nanoscale gap. **JAP**, 119(14), 144501.