Amin Ghafari

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SUMMARY OF QUALIFICATIONS

- Experienced in Computational Modeling and Simulation
- Have a broad knowledge of Nano-scale Heat Transfer Theory, Statistical and Thermal Physics
- Performed fundamental research in the field of Photonics & Phononics
- Interested in solving Physics problems via Deep Learning Models
- Programming Skills: Python, C++, C#, Fortran, Scipy, Numpy
- Software Skills: MATLAB, ANSYS, COMSOL, Unity, Git, TensorFlow, PyTorch, OpenCV, Linux, AWS

EDUCATION

- **University of California Berkeley,** 2014-Dec. 2019(exp.)
  Ph.D. in Mechanical Engineering, Minors: Physics & Mathematics, [GPA: 4] Berkeley, CA
- **University of California Berkeley,** 2017
  M.Sc. in Mechanical Engineering, [GPA: 4] Berkeley, CA
- **Sharif University of Technology,** 2010-2014
  B.Sc. in Mechanical Engineering, [GPA: 3.99] Tehran, Iran

EXPERIENCE

- **Graduate Student Researcher,** 2014-Present
  UC Berkeley, Mechanical Engineering Department, Advisor: David B. Bogy,
  - Simulated the nano-scale heat transfer phenomena in multilayered structures via MATLAB
  - Wrote industry level codes to investigate the thermal response of microfabricated and nanofabricated structures which are suitable for semiconductor and Hard Disk Drive industries,
  - Improved the nano-scale heat transfer theory which encompasses near-field radiation and phonon conduction which in turn predicts the heat flux in nano-structure more accurately.

- **Undergraduate Student Researcher,** 2013-2014
  Sharif University of Technology, Advisor: M.S. Saidi
  - Modeled plasma matter by considering the interaction of ions,
  - Simulated dusty plasma in a microfabrication process,
  - Found a method to manipulate the potential field of plasma to eliminate the interference of dust with the etching procedure. This improved the microfabrication process in the simulations,
  - Utilized C++ for coding and Tecplot for visualizing the data.

- **President/Lead Organizer and Financial Director,** 2018-Present
  Iranian Student Association in America at UC Berkeley, a none-profit organization
  - Revived the organization and Organized Cultural events for UC Berkeley students,
  - Managed all the financial affairs of the organization and increased the funding of the organization by 500% which guarantees a promising future for the organization.

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SIDE PROJECTS

- **Reducing Human's Burden in Deep Inverse Reinforcement Learning from Human Feedback**, [Link]
  Deep Reinforcement Learning Course, Prof. Sergey Levine, UC Berkeley, Fall 2017,
  - Implemented algorithms reducing human's burden for training an agent performing specific tasks
  - Implemented a Critique to learn from data and inquiry from human only on useful data,
  - Integrated the exploration to the learning process so that multiple agents are trained, and more performance options are explored,
  - Used TensorFlow, OpenAI Gym, and Mujoco.
- **Autonomous Mapping and Navigation**, [Link]
  Robotics Course, Udacity, Falls 2017,
  - Wrote a computer vision pipeline (using Python and OpenCV),
  - Performed color thresholding, perspective and coordinate transforms to complete the task of autonomous mapping and navigation in a simulated (Unity) environment.
- **Realistic Rendering of Ice cubes,** [Link]
  Computer Graphics, Prof Ren NG, UC Berkeley, Spring 2017,
  - Devised an optical model for the texture of ice,
  - Implemented a Path tracing code to render various ice cubes using C++.

HONORS AND AWARDS

- The Graduate Division Nano Block Grant Award 2018
- Otto and Herta F. Kornei Endowment Fellowship 2017
- The Graduate Division Block Grant Award 2015 & 2017
- Merit-based Admission Offer to the M.Sc. program 2013
  Mechanical Engineering Department, Sharif University of Technology, Tehran, Iran
- Ranked 3rd among 120 students in class 2014, ME Department, Sharif University of Technology 2014
- Ranked 39th in National University Entrance Exam (among 100,000+ participants) 2010

PUBLICATIONS

- Controlled heat flux measurement across a closing nanoscale gap Applied Physics Letters, 2016
  Ma, **Ghafari**, Budaev, Bogy
- Intense radiative heat transport across a nano-scale gap Journal of Applied Physics, 2016
  Budaev, **Ghafari**, Bogy
- Measurement and simulation of nanoscale HDI heat transfer using a PMR head IEEE, 2017
  Ma, **Ghafari**, Budaev, Bogy