Matin Barekatain

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Education

- **Ph.D. in Electrical & Computer Engineering** — August 2017-Present
  University of Southern California (GPA: 3.8/4.0) — *Los Angeles, CA*
- **M.Sc. in Computer Science and Electrical & Computer Engineering** — August 2017-May 2022
  University of Southern California (Double Major) — *Los Angeles, CA*
- **B.Sc. in Electrical Engineering** — August 2013-July 2017
  Sharif University of Technology — *Tehran, Iran*

Work Experience

- **University of Southern California** — USC, Los Angeles, CA
  Graduate Research Assistant at USC MEMS Group — *August 2017-Present (5.1 years)*

  - Smart Sensing & Embedded DSP
  - RF & Ultrasound MEMS
  - Piezo and Pyro-Electric Energy Harvesting
  - IoT & Wearable Devices

- **Kavoshcom Asia R&D Group** — Tehran, Iran
  Research Intern — *March 2016-August 2017 (1.5 years)*

  - Low-power Remote ECG Monitoring Wearable Device

- **Advanced Communications Research Institute (ACRI)** — Tehran, Iran
  Undergraduate Research Intern — *May 2015-September 2015 (4 months)*

  - Optimized Methods for Sparse Data Processing

Areas of Interest

Smart Sensors
System-on-Chip
Wearable Devices
MEMS
Energy Harvesting
IoT

Honors & Awards

- **Ph.D. Fellowship Awards** — February 2017
  Won the Dean's Ph.D. Fellowship Award of the University of Pennsylvania.
- **2022 Honorable Mention TA Award Winner** — May 2022
  Honored by the USC ECE department, student average rating: 4.75/5.00.
- **Admission to Graduate Program without Entrance Exam** — March 2017
  $< 1\%$ *acceptance rate, Sharif University of Technology.*
- **Member and Fellowship Award Winner of the National Elite Foundation** — August 2013-August 2017
  As an exceptional talented student based on academic success.
- **Ranked 3^{rd} in Terms of Cumulative GPA** — August 2016
  Among 45 B.Sc. Electrical Engineering- Electronics students at Sharif University of Technology.
- **Ranked 50^{th} in National Universities Entrance Exam** — June 2013
  Out of more than 250,000 undergraduate applicants in the B.Sc. Entrance Exam.

Skills

- **Languages**: Python, Matlab, C, LaTeX.
- **Frameworks**: TensorFlow, PyTorch, Librosa, Scikit, Pandas.
- **Development**: Micro-Fabrication, System-on-Chip, PCB Design, MEMS Design.
- **Platforms**: Cypress PSoC, TI BLE, Arduino, GCP.
- **Tools**: Git, COMSOL, Ansys HFSS, AutoCAD, Adobe Photoshop & Illustrator.

Selected Graduate Course Work

Applications of Machine Learning for Medical Data
Micro-electromechanical Systems
Analysis of Algorithms
Machine Learning
Mixed-Signal Integrated Circuit Design
Advanced Computer Vision
Applied Natural Language Processing
Foundations of Artificial Intelligence
Solid State Processing and Integrated Circuits Laboratory
Advanced Electromagnetic Theory

Publications

• M. Barekatain, H. Liu and E. S. Kim, "Wireless and Battery-Less Tamper Detection With Pyroelectric Energy Converter and High-Overtone Bulk Acoustic Resonator," in IEEE Sensors Journal, vol. 22, no. 14, pp. 14639-14646, 15 July15, 2022, doi: 10.1109/JSEN.2022.3182940, IF: 4.325 (Q1).

• K. Sadeghian Esfahani, Y. Tang, J. Lee, M. Barekatain, and E.S. Kim, "Underwater Acoustic Tweezers Capable of Trapping Large and Heavy Particles," Solid-State Sensor and Actuator Workshop, Hilton Head Island, SC, June 5 - 9, 2022, pp. 43 - 46, Acceptance Rate: 40%.

• H. Liu, A. Roy, Y. Tang, M. Barekatain, and E.S. Kim, "Ultrasonic Air-Borne Propulsion Through Synthetic Jets," Solid-State Sensor and Actuator Workshop, Hilton Head Island, SC, June 5 - 9, 2022, pp. 226 - 229, Acceptance Rate: 40%.

• E. H. Hafshejani, R. Rabbani, Z. Azizi, M. Barekatain, E. Khoram and A. Fotowat-Ahmady, "Ultra Low-Power System for Remote ECG Monitoring," 2021 28th National and 6th International Iranian Conference on Biomedical Engineering (ICBME), 2021, pp. 1-8, doi: 10.1109/ICBME54433.2021.9750353.

• A. Shkel, M. Barekatain, and E.S. Kim, "FBAR-Based Sensor for Wireless RFID Authentication of Integrated Circuits," Solid-State Sensor and Actuator Workshop, Hilton Head Island, SC, June 3 -7, 2018, pp. 190 - 193, doi: 10.31438/trf.hh2018.53, Acceptance Rate: 40%.