Alireza Famili

(484) 866-2497 – afamili@vt.edu

Education

Doctor of Philosophy: Electrical Engineering

Virginia Tech, Arlington, VA, USA GPA: 3.88 August 2018 – December 2023

Master of Science: Electrical Engineering

Lehigh University, Bethlehem, PA, USA GPA: 3.85 September 2016 – May 2018

Bachelor of Science: Electrical Engineering

University of Tehran, Tehran, Iran GPA: 3.37 September 2012 – May 2016

Research Experience & Employment

Research Assistant in the Network and Software Security Lab (NSSL) at Virginia Tech **(Jan 2021 - Present)**
- Working on localization/tracking for AR/VR applications with sub-mm level accuracy using photonic oscillators.
- Worked on indoor autonomous drone navigation with cm-level accuracy using 5G/6G technology, Reconfigurable Intelligent Surface (RIS), and high-frequency retroreflectors.
- Worked in a research team on GPS spoofing attack detection using a single 5G base station.
- Worked in a research team on drone detection using LEO satellites (Starlink) as illumination for passive radars.

Fall Intern in the GREENFIELD LABS at Ford Motor Company **(Aug 2022 - Dec 2022)**
- Analyzed outdoor & indoor positioning technology such as Satellite, 5G, Wi-Fi, UWB, Sensor-aid.
- Investigated system and antenna design for vehicle localization to bring precise positioning with potential PoC.
- Designed a collaborative positioning system based on 5G RSS fingerprinting and D2D cooperative positioning.

Summer Intern in the Mixed Reality Team at Microsoft Corporation **(May 2022 - Aug 2022)**
- Collaborated with HoloLens team on body tracking improvements.
- Collaborated with HUMATICS to design a high-accuracy tag tracking using high-frequency RF signals.
- Designed a novel scheme to solve the geometry-induced errors for high-accuracy localization systems.

Summer & Fall Intern at Kryptowire LLC **(May 2021 - Dec 2021)**
- Worked on the implementation of a 5G testbed that can be used to perform 5G NR simulations and emulations.
- Worked on a design of localization system using a single 5G base station.

Research Assistant in the Wireless Networking and Security Research (WiNSeR) Lab at Virginia Tech **(Aug 2018 - Dec 2020)**
- Worked on security issues pertaining to UAVs and designed a novel drone detection scheme.
- Collaborated with MID-ATLANTIC AVIATION PARTNERSHIP (MAAP) on performing experimental evaluation on drone communication using USRPs.
- Worked on indoor drone navigation in absence of GPS signal and designed a system using FHSS/FH-CDMA waveform.

Research Assistant in the Signal Processing and Communication Laboratory at Lehigh University **(Sep 2016 - May 2018)**
- Worked on a project related to cyber security for smart grids and designed a system to detect GPS spoofing attacks using PMU (Phasor Measurement Unit) data.
- Worked on a project related to cyber security for Gas-Electric grid.

Teaching Assistant at Lehigh University **(Jan 2018 - May 2018)**
- Teaching Assistant for the Circuits and Systems course. Also taught the basics of MATLAB.

Research Assistant at University of Tehran **(Sep 2012 - Aug 2016)**
- Designed and simulated a **3G Base Station Antenna** in HFSS.
- Worked in a research team to design and build a **Hearing Aid**.
- Worked in a research team to design and build a modified version of **Mercury Contamination Detector**.
- Modified the design and built an **Optical Blood Pressure Equipment**.
- Worked in a research team to design and build **Brain Stimulator** for curing diseases like Parkinson.

Robotic Teacher at Rouzbeh High School and Computer Teacher at Rouzbeh Middle School **(Sep 2014 - Aug 2016)**
- Robotic Teacher: Taught electronic elements, AVR microcontrollers, programming in C, Code-Vision AVR, and Proteus.
- Computer Teacher: Taught Windows, Internet, Outlook, and Microsoft Word.

Summer intern in Madar Pardaz Company (Summer 2015) and Fan Avaran Company **(June 2014 - Aug 2014)**
- Madar Pardaz: Worked on repairing Control Units for Industrial Machineries (mainly CNCs).
- Fan Avaran: Worked in the design and production of Smoke & Ultra-Violet Detectors using PIC Micro-Controller Units.

Professional Computer Skills

MATLAB, C/C++ Programming, Python, HFSS, ADS, Code-Vision AVR, Altium Designer, Visual Studio, Multisim, Lab View, HSpice, PSpice, Modelsim, Proteus

Publications

- A. Famili, A. Stavrou, H. Wang and J. -M. Park, "PILOT: High-Precision Indoor Localization for Autonomous Drones," in **IEEE Transactions on Vehicular Technology**, vol. 72, no. 5, pp. 6445-6459, May 2023.
- A. Famili, A. Stavrou, H. Wang and J. -M. Park, "iDROP: Robust Localization for Indoor Navigation of Drones with Optimized Beacon Placement," in **IEEE Internet of Things Journal**, vol. 10, no. 16, pp. 14226-14238, 15 Aug.15, 2023.
- A. Famili, A. Stavrou, H. Wang and J. -M. Park, "OFDRA: Optimal Femtocell Deployment for Accurate Indoor Positioning of RIS-Mounted AVs," in **IEEE Journal on Selected Areas in Communications (JSAC)**, vol. 5G/6G Precise Positioning on Cooperative Intelligent Transportation Systems (C-ITS) and Connected Automated Vehicles (CAV).

For the remaining publications, please visit my Google Scholar.

Activities and Honors

- Best paper award in IEEE MetaCom, 2023.
- Lehigh University Graduate Ambassador award for student mentorship, 2017.
- Patent on "Production Process of Traditional Iranian Flat Bread Based on Super Critical CO2 Gas", 2015.
- IEEE Certificate for AVR and HSpice courses, 2013.
- Attained a high rank among candidates in the Iranian national university entrance exam, 2012.

Service

2021

- **SAE:** Reviewer (3 papers)
- **IEEE CAMAD:** External Reviewer (1 paper)
- **SECRYPT:** External Reviewer (2 papers)

2022

- **SAE:** Reviewer (1 paper)
- **IEEE Sensors Journal:** Reviewer (1 paper)
- **IEEE VTM:** Reviewer (1 paper)
- **IJSN:** External Reviewer (1 paper)
- **ACM CODASPY:** External Reviewer (2 papers)

2023

- **iMETA:** Reviewer and **Program Committee (PC)** (2 papers)
- **IEEE Sensors Journal:** Reviewer (1 paper)
- **IEEE TTE:** Reviewer (1 paper)
- **IEEE TVT:** Reviewer (1 paper)
- **IWQOS:** External Reviewer (1 paper)

Additional Links

- LinkedIn
- Personal Website
- Google Scholar