Alireza Famili Cell: (484) 866-2497 – afamili@vt.edu

Education

Doctor of Philosophy: Electrical Engineering

Virginia Tech, Arlington, VA, USA | August 2018– Present | GPA: 3.85

Master of Science: Electrical Engineering

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

Bachelor of Science: Electrical Engineering

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

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 pertain 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 (Spring 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 (Summer 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

Google Scholar Link: https://scholar.google.com/citations?user=dKa-9XYAAAAJ&hl=en

Activities and Honors

- Lehigh University Graduate Ambassador award for student mentorship.
- Patent on “Production Process of Traditional Iranian Flat Bread Based on Super Critical CO2 Gas”.
- IEEE Certificate for AVR and Hspice courses.
- Ranked 18^{th} and 291^{st} in the Iranian Azad and international university entrance exam, 2012.
- Lifeguard Certificate from the province of Tehran.