# Veena Krish

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I'm a Computer Science PhD candidate at Stony Brook University. Since obtaining my BSE/MSE in Bioengineering from UPenn, working as a data scientist, and co-founding a medical device start-up, I've had a growing interest in the security implications of emerging medical technologies. My PhD research focuses on spans security, formal verification, machine learning, and cyber-physical systems.

## ACADEMICS AND RESEARCH

**PhD Candidate in Computer Science, Stony Brook University** — STONY BROOK, NEW YORK

GPA 3.91/4.00 — AUGUST 2019 - PRESENT

Graduate Coursework: Network Security, Machine Learning, Computer Vision, Cyber-Physical Systems, Visualization

TA Experience: CSE316 Fundamentals of Software Development, CSE336 Offensive Security

Current Research:

- Investigating the limits of adversarial threats against medical device controllers
- Investigating the vulnerability of biometric authentication systems to black-box attacks
- Evaluating the robustness of neural network controllers under a variety of threat models

**MSE/BSE in Bioengineering, University of Pennsylvania** — PHILADELPHIA, PA

GPA 3.48/4.00 (Cum Laude) — MAY 2016

TA Experience: ENGR 105: Scientific Computing (MATLAB) for freshmen and sophomore bioengineers)

Research Assistant, Littlejohn Fellow, Litt Translational Neuroengineering Lab

- Implemented a 3D image coregistration algorithm in a Mac OS application within a large research collaboration; publication below

## PUBLICATIONS/PATENT

- Krish V, Paoletti N, Smolka SA, Rahmati, A. Synthesizing Pareto-Optimal Stealthy and Effective Signal-Injection Attacks on ICDs. IEEE Access. 2022
- Vaishnavi P, Krish V, Ahmed F, Eykholt K, Rahmati A. On the Feasibility of Compressing Certifiably Robust Neural Networks. In Workshop on Trustworthy and Socially Responsible Machine Learning, NeurIPS 2022
- Azarion AA, Wu J, Davis KA, Pearce A, Krish VT, Wagenaar J, Chen W, Zheng Y, Wang H, Lucas TH, Litt B, Gee JC. An open-source automated platform for three-dimensional visualization of subdural electrodes using CT-MRI coregistration. Epilepsia. Dec 2014
- Patent WO2017173284A1 2016: Methods, Systems, and Computer Readable Media for Measuring Systemic Vascular Resistance

## PROFESSIONAL EXPERIENCE

**Medical Device Security Intern, Harbor Labs** — PIKESVILLE, MD

- Summer internship encompassing threat assessments and penetration testing for medical devices — SUMMER 2023

**R&D Research Intern, General Motors** — WARREN, MI (REMOTE)

Perception, Planning and Decision Systems, R&D Division — SUMMER 2022

- Summer internship focused on improving the performance of large, unsupervised vision models for use in autonomous driving
- Designed and implemented a new method for adversarially training an unsupervised segmentation model

**Summer Research Intern, Air Force Research Laboratory** — WRIGHT-PATTERSON AFB, OH (REMOTE)

Autonomy Capability Team (ACT3), Sensors Directorate — SUMMER 2021

- Summer intern within the Safe Autonomy team, where I led self-guided research into the robustness of neural network controllers designed for a series of reinforcement learning benchmarks (publication in preparation)

**Data Scientist Consultant, Tessella Inc** — NEEDHAM, MA

Data scientist for healthcare-focused analytics consulting services firm, promoted every year; selected project history: 2016 - 2019

- Implemented bayesian statistical models for a large pharmaceutical company to simulate clinical trials (WPF, C#, .NET)
- Developed LIMS application to track biomarkers for a biotech company (full-stack: Postgres, Java API, Aurelia JS, AWS-hosted)

**Co-Founder, Shock Analytics LLC** — 2016-2019

Designed system for noninvasive measurement of systemic vascular resistance, a biomarker of cardiovascular health

- Built the initial prototype and developed software for data collection/modeling; accepted into the DevelUPmed startup incubator

## LEADERSHIP/AWARDS

- Recipient of John Marburger III Fellowship for Science, Engineering & Mathematics, Stony Brook University, 2022-2023
- President of the Women PhDs affinity group, supporting women PhD students in the CS department at Stony Brook, 2020-current
- TA training ambassador for the College of Engineering and Applied Science, Stony Brook University, 2021