Sadman Ahmed Shanto

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EDUCATION

TEXAS TECH UNIVERSITY (TTU)
BS in Applied Physics
May 2021 | Lubbock, TX
Minors: *Math & Computer Science*
CGPA: 3.703 / 4.0

COURSEWORK

Graduate
Introduction to Quantum Computing
(Teaching Asst. Fall 20)
Advanced Quantum Information and Computation

Undergraduate
Object Oriented Programming
Theory and Design of Algorithms
Software Engineering I
Modern and Intermediate Physics Lab
Statistical Thermodynamics
Classical Mechanics
Mathematical Methods I & II
Linear Algebra
Mathematical Statistics
Electromagnetism I & II
Quantum Mechanics I & II
Optics

SKILLS

Programming
Python, C++, C, JAVA, Mathematica, Matlab, R, Julia, Bash, TEX, Swift
Operating System
MAC OS, Linux, Raspbian, Windows 10
Data Analysis
Numpy, Scipy, SymPy, Matplotlib, Ray, Modin, Pandas, StatsModels, BeautifulSoup
Machine Learning
Tensorflow, Keras, SciKit Learn, Pytorch, Open AI Gym
Digital Electronics
LTspice, Vivado Design Suite, KiCad
Microcontrollers
Arduino, Raspberry Pi, FPGA
3D Modelling
Inventor, Blender

CONFERENCES

Transportation Research Board Annual Meeting 2021
Annual American Physical Society (APS): Texas Section (2019 - 2020), Far West Section (2020)
Instiute Of Physics (IoP) Quantum 2020
TTU Virtual Research Conference 2020
TTU Physics Department (2019-2020)

EXPERIENCE

ADVANCED PARTICLE DETECTOR LABORATORY | Undergraduate Research Assistant
Nov 2018 - Present | Lubbock, TX

- Designed the Data Acquisition System for a prototype Muon Telescope that makes use of 40 Arduino's, 2 FPGA's and CAMAC Crate Modules to record data at 0.5 ns fidelity
- Facilitated the design of custom PCB's (KiCad) and soldered specialized circuits
- Engineered the calibration and installation of 40 SiPM's and 44 PMTs on the telescope
- Designed custom Winston Cone light collectors for increased optical transmission
- Created a real-time event dashboard for the telescope and automated analysis program using TTU's High Performance Computing Cluster (HPCC) as the backend
- Aided in establishing a network (MQTT, SMTP, MySQL) of sensor enabled Raspberry Pi's to create a weather station and particle counter dashboard for the lab
- Currently incorporating concepts of image segmentation and ML techniques (RNN's and LSTM's) to enhance final image and improve muon track reconstruction efficiency

VANDERBILT UNIVERSITY | Summer Research Intern
May 2020 – Aug 2020 | Nashville, TN

- Contributed to developing a computational framework (*Flow*) for deep RL and control experiments for traffic microsimulations
- Established an object oriented system for calibrating results from stochastic simulations under multi-objective methods using gradient free algorithms
- Implemented an optimization framework to fit simulation data to macroscopic RDS data sets

CENTER FOR MULTIDISCIPLINARY RESEARCH IN TRANSPORTATION | Undergraduate Research Assistant
Jan 2019 - Jul 2020 | Lubbock, TX

- Developed an open-source Cellular Automaton based analysis and simulation software for studying various heterogeneous traffic flow scenarios
- Designed various Autonomous Vehicle Models to investigate regimes for most efficient shared lane mobility in multi-lane networks
- Incorporated Reinforcement Learning functionality to the software

VIRTUAL THERMAL FLUIDS | Business Development Intern
Sep 2019 - Dec 2020 | Lubbock, TX

- Developed data-driven strategies to explore emerging markets for commercialization of our consultation services through a NSF-funded program where I prepared and led presentations to pitch our company raising $50000 in series A funding

AWARDS

2017-21	TTU Presidential Scholarship & Deans' List
2020	C.C. Schmidt and Alma K. Schmidt Award in Physics, TTU
2020	Certification of Quantum Excellence, IBM Qiskit
2019	Outstanding Student Presenter at Texas Section of APS Conference
2018-19	Bucy Undergraduate Scholarship Physics Award, TTU
2018-19	Raiders Who Rock: Pursuit of Excellence Award, TTU
2018	Silver Medal, University Physics Competition (UPhysC)
2017	Glen Mann & Gangapadhaya Physics Scholarship Award, TTU

PUBLICATIONS

[1] D. W. R. R. B. S. G Gunter, **SA Shanto**. Challenges of microsimulation calibration with traffic waves using aggregate measurements. *2021 Transportation Research Board Annual Meeting*, in press.

[2] M. M. . S. C. **SA Shanto**, R Perez. High-resolution muography using a prototype portable muon telescope. *Journal of Undergraduate Reports in Physics*, 2020.