Sunny Guha

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EDUCATION

- **Texas A&M University**, College Station, TX — Aug 2015 – Present
  PhD in Physics (GPA: 3.84)
- **BITS Pilani University,** Goa, India, — Aug 2010 - Aug 2015
  Bachelors and Masters in Electronics and Instrumentation (GPA: 3.7)
- **Coursework**
  Artificial Intelligence, Reinforcement Learning, Deep Learning, Machine Learning, Software Engineering, Computer Networks, Advanced Statistics, Computational Physics, Analysis of Algorithms, Data Structures.
- **Specialization**
  Deep Learning, TensorFlow, TF.JS, String Theory, Research

SKILLS

Python (5 years), C++, JavaScript, MATLAB, Mathematica, Shell Programming, Linux Bash, TensorFlow, PyTorch, SciPy, Microcontroller Programming, Git, SQL, NoSQL, jQuery, OpenCV, PHP, Data Mining, GCP, AWS, Spark

WORK EXPERIENCE

- **Texas A&M University,** **Research Assistant**, Aug 2017 - Present,
  - Currently working on quantifying loss of information in deep Graph Convolution Networks and interpretive deep neural networks.
  - Discovered partial space of consistent theories by data analysis on a 100-node cluster. Applied linear semi-definite programming code in C++, then subsequent data-analysis was implemented in Python leveraging Pandas library.
  - 7 research publications in renowned journals on practical aspects of String Theory and CFTs involving complex mathematical and statistical analysis furthering the understanding of fundamental physics.
  - Published a major book report with a collaboration of one hundred physicists on expectation of Beyond Standard Model Physics in future colliders.
- **Texas A&M University,** **Teaching Assistant,** Aug 2015 - Aug 2018,
  - Head course instructor for Physics 202 and Statistics 101 course. Led a team of five teaching assistants, organized entire course, delivered lectures and planned exams.
  - Guided a team of undergraduates to participate in a robotics challenge involving computer vision. Letter identification was performed in the Arduino based bot.
- **CERN**, **Geneva** **Intern,** May 2014 - Sept 2014,
  - Designed a modified implementation of SISCone clustering algorithm in C++ and Python to detect jet structure in Collision data at CERN leading to 5-10% improved accuracy of detection.
  - Paired conventional edge detection techniques with exploratory fuzzy logic techniques in Python to achieve accuracy of 95% on test-data of particle collision imagery.

PROJECTS

- **Reinforcement Learning Environment**: Programmed a snake-game environment for TF-Agent Reinforcement toolkit using pygame. The environment serves to execute Deep Reinforcement Learning algorithms.
- **CNN Model:** Performed classification of galaxies based on appearance utilizing a three-layered CNN written in TensorFlow. The detection algorithm was able to attain an accuracy of 90% on test-data set.
- **Ported TF 1 Code:** Ported 500-1000 lines of TensorFlow 1 code from Coursera assignments to TensorFlow 2 and published them online on Medium.
- **Path Finding:** Analyzed and compared performance of various path finding algorithms with different heuristic functions to find shortest path between two points with random obstructions and path costs.

AWARDS

Won 1st place at TAMU-DATATHON 2019 (MLH-Hackathon). Constructed an ensemble model including gradient boost, random forest and neural networks to predict equipment failure from a data-set containing 170 features.

INTERESTS

Soccer, Hiking, Squash, Stephen King ☺, Cellular Automaton, Robotics, Arthouse-Cinema