SUKIRNA ROY
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Education

University of Central Florida — Orlando, FL
Master of Science in Computer Science; GPA: 3.95 / 4.0 — *August 2019 – May 2021 (Expected)*

- Courses: Advanced Artificial Intelligence, Natural Language Processing, Design and Analysis of Algorithms, Advanced Computer Architecture, Advanced Computer Networks, Multicore Programming, Complex Adaptive Systems, Network Economics, Simulation Techniques, Current topics in Modeling and Simulation

Indian Institute of Space Science and Technology — Thiruvananthapuram, India
Bachelor of Technology in Computer Engineering (Avionics) — *August 2009 – May 2013*

- Courses: Computer Organization and Operating Systems, Software Engineering, Computer Networks, Wireless Mesh Networks, Computer Graphics, Digital Design, Signals and Systems, Probability and Statistics, Control and Guidance Theory, Linear Algebra

Languages / Frameworks

- Languages: Python, C++, Netlogo, SQL
- Frameworks: Git, Pytorch, Tensorflow, ION-DTN, ZeroMQ

Experience

Evolutionary Computation Lab, University of Central Florida — Orlando, FL
Graduate Research Assistant — *May 2020 – Present*

- Involved in exploration of novel methods for improving file compression using cellular automata and studying associated emergent behavior with Dr. Annie Wu.

Indian Space Research Organisation — India
Project Manager — *July 2016 – June 2019*

- Spacecraft launch and de-orbit operations: Successfully directed and optimized ground support for launch, early phase and de-orbit operations with 33% reduction in manpower requirement [5+ launches].
- Spacecraft on-orbit operations: Directed, up-scaled and optimized operations to 2x initial capacity with 66% reduction in manpower requirement [Fleet of 25+ spacecrafts].
- Personnel Training Program: Successfully coached 75+ new engineers in operational procedures over a span of 5 years.

Software Engineer — *October 2013 – June 2016*

- Geosat linked archival system [Starburst MFTP]: Designed and developed software infrastructure for sat-link based high throughput data archival systems resulting in 85% cost savings [$93,500 savings/instance].
- CCSDS infrastructure compliance: Successfully delegated online deployment of CCSDS compliant infrastructure, ensuring global operability [70+ communication pipelines].
- Low cost Antenna Control System [Visual Basic]: Engineered and maintained in-house antenna control system resulting in 80% cost savings [$12,000 savings/instance].

Publications

- NASA Interplanetary Overlay Network Emulator: Design Principles and Performance Analysis: Presented and published in proceedings of ISRO Seminar on Computers & Information Technology 2015, evaluating the performance of NASA's ION-DTN in varying link conditions.
- Enablers of IoT and their Security and Privacy Issues: Published in Internet of Things (IoT) in 5G Mobile Technologies, by Springer International Publishing AG, a survey of the current state of technologies capable of enabling the Internet of Things and their ability to be used as secure channels of communication.

Projects

- NASA Interplanetary Overlay Network Emulator [C, Bash]: Designed and coded emulator to evaluate the performance of protocol stacks over varying link conditions. Utilized to evaluate the performance of NASA's ION-DTN.
- Lock free concurrent data structures [C++]: Designed, coded and open-sourced a library providing lock free, linearizable and concurrent implementations of stacks, queues and hash maps using descriptor objects and atomic instructions.
- Cellular automata-based simulations [Netlogo]: Designed, coded and analyzed multiple cellular automata-based simulations for fire front propagation, epidemic spread and civil violence.