Sukirna Roy

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Education

- **University of Central Florida** — Orlando, FL
  Master of Science in Computer and Information Sciences — *August, 2019 – August, 2021 (Expected)*
  - **Courses Taken**: Complex Adaptive Systems, Multicore Programming, Advanced Computer Networks
- **Indian Institute of Space Science and Technology** — Trivandrum, India
  Bachelor of Technology in Avionics — *August, 2009 – May, 2013*
  - **Courses Taken**: Computer Organisation and Architecture, Algorithms and Data Structures, Computer Networks, Software Engineering, Wireless Mesh Networks, Computer Graphics, Linear Algebra, Probability and Statistics, Numerical Analysis, Physics, Astronomy

Publications

- **NASA Interplanetary Overlay Network Emulator: Design Principles and Performance Analysis**: Presented and published in proceedings of ISRO Seminar on Computers & Information Technology 2015, detailing 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, Cham, ISBN 978-3-319-30913-2, 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

- **Email based scheduling system for HPC Cluster [Python 3, Bash, Linux]**: Designed and deployed an email based scheduling and administration system for high performance computing cluster at IIST.
- **NASA Interplanetary Overlay Network Emulator [C, Bash, Linux]**: Designed and deployed an emulator to the study the performance a protocol stack over varying link conditions at the Sensors and Networks Lab, IIST. Used it to study the performance of NASA's ION-DTN.

Fellowships

- **Fast.ai International Deep Learning Fellowship, 2017 [Jupyter Notebook, Pytorch, AWS]**: Linear Regression Models, CNN, RNN, Transfer Learning, Style Transfer, GAN.

Experience

- **Indian Space Research Organisation** — Hassan, India
  Scientist / Engineer — *Oct 2013 - June 2019*
  - **High throughput geosat linked data archival system [ZeroMQ, Starburst MFTP, ION-DTN, Python 3, Linux]**: Designed and prototyped backend architecture for high throughout (100 Mbps) data archival system over geosat links, mitigating link inconsistencies and high RTT, with cost saving of 85% compared to externally procured systems.
  - **Low cost Antenna Control System [VisualBasic, C, Windows]**: Deployed in-house developed antenna control system for tracking geo-synchronous satellites with cost saving of 80% compared to externally procurred systems.
  - **On-orbit operations for geosats [C, Visual C++, Python3, Linux, Windows]**: Managed on-orbit operations of India's entire fleet of geo-stationary spacecrafts including GSATs, INSATs, METSAT and IRNSSs.
  - **Launch and de-orbit operations for geosats [C, C++, VisualBasic, Python3, Linux, Windows]**: Managed launch and early phase operations for GSATs and INSATs and de-orbit operation for METSAT-1.
  - **Deployment and migration from in-house to CCSDS compliant infrastructure [C, Python3, Linux]**: Managed deployment and migration from ISRO's in-house satellite communication infrastructure to CCSDS compliant infrastructure.
  - **Personnel Training Programme [C, VisualBasic, Python 3, Linux, Windows]**: Instructed new inductees and trained them in operational procedures.

Languages/Frameworks

- **Languages**: C, C++, Python 3, Visual Basic, Visual C++
- **Frameworks**: Jupyter Notebook, Pytorch, Google Colab, ION-DTN, ZeroMQ, AWS