# Sukirna Roy

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## Education

- **University of Central Florida** — Orlando, FL
  *Master of Science in Computer and Information Sciences; GPA: 4.0/4.0* — *August, 2019 – April, 2021 (Expected)*
  - **Courses Taken**: Multicore Programming, Advanced Computer Architecture, Advanced Computer Networks, Design and Analysis of Algorithms, Complex Adaptive Systems
- **Indian Institute of Space Science and Technology** — Trivandrum, India
  *Bachelor of Technology in Avionics* — *August, 2009 – May, 2013*
  - **Courses Taken**: Software Engineering, Wireless Mesh Networks, Computer Graphics, Linear Algebra, Probability and Statistics, Numerical Analysis, Economics, Physics, Astronomy

## Languages/Frameworks

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

## Experience

- **Indian Space Research Organisation** — Hassan, India
  *Scientist / Engineer* — *Oct 2013 - June 2019*
  - **Geosat linked archival system [Starburst MFTP]**: Designed and developed communication back-end for data archival system [100Mbps throughput] over geosat links with 85% cost savings [93,500 USD savings/instance].
  - **Low cost Antenna Control System [VisualBasic]**: Engineered and maintained in-house antenna control system capable of tracking geosats with 80% cost savings [12,000 USD savings/instance].
  - **On-orbit operations for geosats**: Directed ground segment for on-orbit operations of GSATs, INSATs, IRNSSs and METSAT [Fleet of 25+ satellites].
  - **Launch and de-orbit operations for geosats**: Directed and coordinated ground support for launch, early phase and de-orbit orbit operations of GSATs, INSATs IRNSSs and METSAT [5+ launches].
  - **Deployment of CCSDS infrastructure**: Delegated deployment of CCSDS compliant infrastructure, ensuring global operatibility [70+ uplink and downlink chains].
  - **Personnel Training Program**: Instructed new inductees and coached them in operational procedures [75+ engineers].

## 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, 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

- **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.
- **Lockfree concurrent data structures [C++]**: Designed and coded lockfree, linearizable and concurrent stacks, queues and hashmaps using descriptor objects and atomic instructions.
- **Cellular automata based simulations [Netlogo]**: Designed, coded and studied multiple cellular automata based simulations for fire front propagation, epidemic spread and civil violence.

## Fellowships

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