

Asutosh Palai

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EDUCATION

AUG 2018 - PRESENT **Master of Science**
COMPUTER SCIENCE
Georgia Tech

JULY 2014 - MAY 2018 **B.Tech. (Hons.)**
COMPUTER SCIENCE
IIT Roorkee
CGPA: 9/10

SKILLS

LANGUAGES Java, C, C++, PHP, Python,
Common Lisp, Javascript,
CSS, Haskell, Bash Shell

TECHNOLOGIES IDA Pro, x64dbg, Laravel,
Node.js, SQL, MongoDB,
Docker, React, WebRTC

LINKS

GITHUB github.com/asutoshpalai
BLOG blog.asutoshpalai.in
LINKEDIN linkedin.com/in/asutoshpalai

ACHIEVEMENTS

2018 **Completed NSA Codebreaker**

2017 **CSAW CTF (NYU)**

Winner in India region, 10th overall

2017 **Microsoft code.fun.do hackathon**
College winner and national finalists

2016 **Microsoft Build The Shield CTF**
National finalists

PROJECTS

CodeVillage

Designed and developed an online sports programming platform using **Laravel, PHP, MySQL and Redis**. Improved and integrated the judge in **C++** with the new platform. It hosts competitions which see international participation.

VR Classroom

Built the P2P networking for interaction during video lectures in a VR environment using **WebRTC**. Also added support for live captions, online references and 3D models to be projected.

Predicting Network Traffic

Performed analysis of network traffic on the institute intranet portal to forecast future values. Along with regular time-series analysis (ARIMA), Generalised Autoregressive Score modelling and LSTMs was used.

Natural Language Does Not Emerge 'Naturally' in Multi-Agent Dialog

Implemented the paper by *Kottur et al.* & achieved higher accuracy by restricting search space in task domain and reducing initial penalties.

WORK EXPERIENCE

Graduate Research Assistant AUGUST 2018 – PRESENT
Georgia Institute of Technology

Maintaining the VMs, **OpenShift** and **PostgreSQL** clusters. Working with **Docker** images. Developer on sea level sensor program involving IoT technologies including OGC SensorThings API.

Malware Analyst APRIL 2018 – JULY 2018
Hispasec Sistemas S.L.

Analysed banking **malware** both on **Windows and Android platform**, kept track of new malware which might target the clients and **analysed suspicious files** (PDF, EXEs, DOCs) submitted by them.

Summer Analyst MAY 2017 – JULY 2017
Goldman Sachs

Developed an archival system and data exporter for Order Management System in Equities One Delta team using **Java (Vert.x)**, **AMPS**, **MongoDB** and **React**. Also evaluated PostgreSQL, Neo4j for storing the order history.

Student Developer - Ruby Org. MAY 2016 – AUGUST 2016
Google Summer of Code

Designed and developed plugin system for **Bundler**, the popular package manager for **Ruby** language under the Ruby organisation. It allowed addition of custom features like **using gems from different sources, life-cycle hooks and custom commands**.

RESEARCH

Learning and Generating Firewall Rule

Generating **firewall rules** using ensemble method of **Logical Analysis of Data** and a jointly-trained Autoencoder-SVM model.

Blockchain Summarization

Proposed a scheme to *reduce the storage space of blockchain* which achieved 45% compression on Bitcoin blocks. [paper]

ACTIVITIES

Open Source/GitHub

- **Pythia** - An operating system from scratch with its own boot-loader. It has a working shell, portable memory management system and other necessary drivers. [link]
- **Indiechain** - A simple implementation of basic blockchain protocols for prototyping and testing new ideas. [link]
- Contributed bug fixes and feature addition to other projects like, **Radare2, Bundler, Binwalk** etc.

Campus Talks and Hackathons

- Gave **lectures and talks** on the subjects of *web development, Linux, web security and binary reversing* at IIT Roorkee.
- **Organized hackathons, coding weeks and other competition** for campus students at IIT Roorkee.

Miscellaneous

- **CTFs** - A frequent CTF player solving binary, web and reversing challenges.
- **SDSLabs** - An active member of the technical group and also managed the group as Join Secretary at IIT Roorkee.
- **Watch Out** - Web-head and Join Secretary of the campus media body at IIT Roorkee.
- **InfoSecIITR** - Founding member of the information security group at IIT Roorkee.