ANIKET ANAND

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EDUCATION

- **Indian Institute of Technology (BHU),** *Varanasi, India* *(Jul 2016 - Jul 2020)*
  B.Tech. in Ceramic Engineering
  CGPA: **9.34/10** (Ranked **4th** in Department)
- **Nalanda Academy Senior Secondary School,** *Kota, India* *(Apr 2015 - Mar 2016)*
  Secured **93.80%** in Class XII: Maths: 95%, Physics: 93%, Chemistry: 95%

RESEARCH INTERESTS

Distributed Systems, IoT, Blockchain, System Security, Applied Cryptography, Applied Deep Learning

INTERNATIONAL RESEARCH AND DEVELOPMENT EXPERIENCE

A Novel Cryptocurrency from Distributed Computing Approach *(Oct 2020 - Ongoing)*
Dr. Davide Frey, WIDE Group, IRISA/INRIA Rennes, France

- Formulating the design of a novel **cryptocurrency** based on scalable and reliable broadcast to ensure a simple FIFO order on `balance` and `transfer` operations in the presence of Byzantine processes

Performance Evaluation of Intermittently Connected Blockchain Network *(Feb 2020 - Ongoing)*
Prof. Muttukrishnan Rajarajan, SMCSE, City, University of London, England

- Simulated Proof of Work blockchain instances with **wireless** and **mobile** nodes using **ns-3** simulator
- Analyzed **performance** of blockchain instances varying various **network** and **blockchain parameters** and performing **analytics analysis** to find the optimal instance in constrained network connectivity

A Private Channel for ESP32 *(Oct 2019 - Dec 2019)*
Prof. Massimo Villari, MIFT, University of Messina, Italy

- Utilized **Net module** of **LuaRTOS** firmware for ESP32 to connect it to a Wifi WPA2 Enterprise "eduroam" network and established a secure connection with OpenVPN server using client certificates

Blockchain-Based Architecture for Regional Air Traffic Flow Management *(May 2019 - Jul 2019)*
Dr. Ta Nguyen Binh Duong, SCSE, Nanyang Technological University, Singapore

- Established a **Hyperledger Fabric** network on lab servers representing airports and trained separate Q-Tables independently with **700+** Flightradar24 data of **ASEAN** countries for local optimization
- Optimized the Q-Tables locally using **epsilon-greedy** updates, recorded them on ledger transaction and voted for the global optimal model in **Chaincode** while preserving the **privacy** of airport flight data
- Achieved around **15%** reduction in system penalty (inversely proportional to ground and in-air delay) and the delays converged **33%** faster when executed for 1000 local training iterations with 10 votings

Privacy-Preserving in Decentralised Supply Chain Management (DSCM) Tool *(Dec 2018 - Apr 2019)*
Prof. Ali Sunyaev, AIFB, Karlsruhe Institute of Technology, Germany

- Enhanced the functionalities of an access-management Desktop Application programmed in Java 8 installed on **Ethereum Geth** client connected to **Rinkeby** testnet to grant/revoke access to supplier-data
- Implemented smart contract's request for JSON Web Token (JWT) in **Solidity** and integrated an Admin view in the DSCM tool to **synchronize** particular permissions with the deployed smart contract

Advanced Techniques for Osmotic Computing *(Jun 2018 - Nov 2018)*
Prof. Massimo Villari, MITF, University of Messina, Italy

- Generated **RSA** public-private key pair and Certificate Signing Request (CSR) in **ESP32** (acting as data producer) for its authentication and processed sensor data to JWS Compact Serialization for encryption
- Configured instances of a **Certificate Authority** in **Docker** container by **OpenSSL** for signature and in smartphone (consumer) for verification of securely transmitted **X.509** Public Key Certificates

PUBLICATIONS

- **A. Anand**, A. Galletta, A. Celesti, M. Fazio and M. Villari, "**A secure inter-domain communication for IoT devices**," *2019 IEEE International Conference on Cloud Engineering (IC2E)*, Prague, Czech Republic, 2019, pp. 235-240. DOI: 10.1109/IC2E.2019.00038

- S. Gupta, R. S. Singh and **A. Anand**, "**Cloudlet Scheduling using Merged CSO algorithm**," *2018 Fifth International Conference on Parallel, Distributed and Grid Computing (PDGC)*, Solan Himachal Pradesh, India, 2018, pp. 278-283. DOI: 10.1109/PDGC.2018.8745975

KEY PROJECTS AND INTERNSHIPS

Spaced Repetition in Deep Knowledge Tracing (DKT) *(Sep 2019 - Nov 2019)*
Prof. A K Singh, Computer Science and Engineering, IIT (BHU)
- Implemented the training process of LSTM-based Seq2Seq DKT model in TensorFlow after processing the attributes of **13 million** inputs of Duolingo student **language learning data** to one-hot encodings
- Obtained **77%** area under curve, **71%** accuracy, **73%** precision, and **82%** recall rate of correct answers on executing the DKT model for 5 epochs on 100,000 cross-validation set of language learning data

An Efficient Algorithm for Cloudlet Scheduling *(Feb 2018 - May 2018)*
Prof. Ravi Shankar Singh, Computer Science and Engineering, IIT (BHU)
- Contrived a mapping of processors to tasks by systematically combining the advantages of Particle Swarm and Cat Swarm Optimization algorithms and simulated the allocation on **CloudSim** simulator
- Achieved **20%** reduction in execution time without an increase in cost and a lowered randomness error

PHP Webapp Development *(Dec 2017 - Jan 2018)*
Geniesoftsystem Pvt. Ltd, Mumbai, India
- Developed an **e-commerce** webapp in PHP's Codeigniter framework using MySQL database managed by phpMyAdmin for users to register, login and add, remove, and edit their product to be sold

Android Application Development at Geniesoftsystem Pvt. Ltd. *(May 2017 - Jul 2017)*
Geniesoftsystem Pvt. Ltd, Mumbai, India
- Developed an application to **generate** QR code of input text and separately **scan** any given QR code. Available on **Google Play Store** for Android version 4.0.3 and above http://bit.ly/330Mj8N
- Implemented logic of multiplayer Teen Patti (a card game) by leveraging **AsyncTask** threading class for sequential execution players' moves and developed client's requirement-compliant UI for Android app

RELEVANT COURSES UNDERTAKEN

- **Computer Science:** Computer Programming, Network Security, Natural Language Processing, Introduction to Modern Application Development*, Operating System*, Deep Learning Specialization+, Applied Cryptography+, Algorithms on Graphs+, Python for Everybody+
- **Mathematics:** Engineering Mathematics I, Engineering Mathematics II, Mathematical Methods, Operation Research, Discrete Mathematics*, Probability and Computing#

TECHNICAL SKILLS

- **Languages**: C, C++, Python, Java, Golang, Solidity
- **Technologies Used**: ns-3, Arduino, Amazon EC2, Docker, OpenVPN, Hyperledger Fabric, TensorFlow

SCHOLASTIC ACHIEVEMENTS AND ACCOLADES

- Nominated for **Sahaj Memorial Award** of AIPMA for best student in Ceramic Engineering *(2020)*
- Selected among **35** students from India for NTU-India Connect Research Internship *(2019)*
- Invited by **Hasura** for onsite Product Development Fellowship *(2017)*
- Secured **All India Rank** within top **4%** in JEE-Advanced out of 200,000+ aspirants *(2016)*
- Achieved **All India Rank** within top **0.8%** in JEE-Main out of 1.2 million+ aspirants *(2016)*
- Secured a **top 300** spot in National Standard Examination in Junior Science (NSEJS) *(2013)*

EXTRACURRICULARS

- Contributing to **CNCF Layer5** open source project (2020)
- Built an **Alexa skill** during Training Alexa workshop organized by **Amazon Web Services** *(2019)*
- Developed **Photo Censor** app for nudity detection in **Microsoft Code Fun Do Hackathon** *(2018)*
- Assisted in the Appathon (hackathon event) of **Technex'18** as an Event Coordinator *(2018)*
- Co-organized frequent **Android Development Workshops** for Freshers of IIT (BHU) *(2017)*

*NPTEL, +Coursera, #Self-taught