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SUBHASH CHANDRA

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RESEARCH INTEREST

My research interest lies in the intersection area of PPML, differential privacy, secure multi-party computation, cryptography, information security, virtual reality, data mining, reinforcement learning, NLP, HPC, and parallel computing. My most recent work focused on developing a spoken dialogue system in a controlled knowledge base. Where I designed and developed a VR lab for college experiments and provided a virtual assistant in the virtual lab experiments. I also have worked with **Padma Shri Prof. Balki** at Supercomputer Education Research Centre, IISc. On " Automated Cryptographic Algorithm Validation System," where I wrote code for validating DSA, ECDSA, RSA, etc. cryptographic algorithms. In between, I managed two servers, GitHub, and conducted a few workshops. On weekends, I teach "AI with Python" to two USA-based freshman.

EMPLOYMENT

Research Project Assistant — **Indian Institute of Science (IISc.)** — **Oct 2019 - Present**

- Working as a team lead for designing and developing virtual physics experiment lab and virtual assistant module at Design Innovation Centre (DIC) lab with Prof. B. Gurumoorthy at the Department of Centre for Product Design and Manufacturing (CPDM) at the Indian Institute of Science, Bangalore.
- Built a virtual assistant for the school's virtual laboratory by implementing BERT model, AllenNLP model, gTTS, and IBM's Watson services in which students can interact verbally and do experiments. Conducted workshops, seminars, and written reports, managed BitBucket, was in charge of the "3D Printing" service for the institute; etc.

Research Project Assistant — **Indian Institute of Science (IISc.)** — **Jan 2019 – Sept 2019**

- Worked as team lead for automatic cryptographic algorithm validation system (ACAVS), a tool which makes the cryptographic algorithms validation process quick, under the CAVP program with **Padma Shri** Prof. N. Balakrishnan at the Department of Supercomputer Education and Research Centre (SERC), Indian Institute of Science, Bangalore.
- Built an Automatic Cryptographic Algorithm Validation System. I wrote code for Validating DSA, ECDSA, RSA, etc., cryptographic algorithms conforming to FIPS 140-2 and FIPS 140-4, and recommended by NIST. I also worked as a full-stack developer in this project, managing two servers and GitLab for the research project team.
- Supervised two students from NITK Surathkal in their summer internship at SERC, Indian Institute of Science, Bangalore.

Summer Research Fellow(SRF), Intern — **Indian Academy of Sciences (IASc.)** — **Summer 2018**

- I worked with Prof. Amit Apte as a "Summer Research Fellow" under the FAST-SF program at the International Center for Theoretical Sciences (ICTS-TIFR).
- I designed and developed a physical model to demonstrate an experimental probability distribution.

Undergraduate Summer School, Intern — **Indian Institute of Science (IISc.)** — **Summer 2017**

- I was part of the "Undergrad Summer School 2017" at the Department of Computer Science and Automation (CSA) at the Indian Institute of Science, Bangalore.
- I presented my final year major project in summer school and was selected among the top 10 projects.
- We explored different cutting-edge research areas which were going on in various research labs of the department of Computer Science and Automation (CSA), IISc.

LANGUAGE AND TECHNOLOGY

- Programming Language- Java, C, C#, Python, Octave, C++, PHP, HTML, CSS, etc.
- Frameworks and Tools- Eclipse, Netbeans, IntelliJ IDEA, JavaScript, Apache Wicket, Unity 3D game engine.
- Others- Github, Maven, IBM Watson services, full stack developer(Medium level), gTTS.
- Operating System- Linux, Windows, Mac OS, Android.
- Database- MYSQL

EDUCATION

Bareilly, India — **Institute of Engineering and Technology** — **Aug 2013 – Aug 2017**

- B.Tech. in Computer Science and Information Technology. CGPA: 7.48/10
- Main coursework: Probabilistic Systems Analysis and Applied Probability (MIT OpenCourseWare), Data Structure, Design and Analysis of Algorithms, Computer Architecture, Artificial Intelligence, Database System, Operating System, Software Engineering, Deep Reinforcement Learning, Data Mining, Robotics with AR/VR, Linear Algebra, etc.

PROFICIENCY CERTIFICATES FROM INDIAN INSTITUTE OF SCIENCE, BANGALORE

- "Robotics With AR/VR" at the CCE Department, Indian Institute of Science, Bangalore, advised by Prof. Pradipta Biswas (CPDM, IISc.) from Aug 2022 to Dec 2022
- "Reinforcement Learning" at the CCE Department, Indian Institute of Science, Bangalore, advised by Prof. Shalabh Bhatnagar (CSA, IISc.) from Jan 2019 to May 2019.
- "Deep Learning" at the CCE Department, Indian Institute of Science, Bangalore, advised by Prof. Sri Ram Ganapathi (ECE, IISc.) from Jan 2018 to May 2018.
- "Data Mining" at the CCE Department, Indian Institute of Science, Bangalore, advised by Prof. Susheela Devi (CSA, IISc.) from Aug 2017 to Dec 2017.

ACHIEVEMENTS AND RESPONSIBILITIES

- NET qualified and secured All India Rank 148 (AIR). [JEST 2018]
- Selected in the top 100 Data Science students out of 8000 Students at Univ.AI (An AI Startup started by Harvard and MIT Professors in 2021.
- Secured rank 132 for the competitive programming ACM-ICPC 2016 at Kolkata region.
- Qualified the prestigious IIT-JEE Mains and was among the top 1% out of about 10 lakh students.
- In my undergrad, I was class representative (CR) and coordinator, problem setter for the college's annual technical/coding fest.
- Computer Quiz winner from "Ravi House" at the college level.

INTERNATIONAL CONFERENCES / SYMPOSIUMS

- "Secure Multiparty Computation: Theory and Practice" organized by Indian Institute of Science, Bangalore (Jan 19 to 22, 2020,Web: https://www.csa.iisc.ac.in/~cris/MPCWorkshop/
- "2019 Global Technology Summit" Carnegie India, organized by Carnegie Endowment for International Peace, India (December 4 to 6, 2019)
- "Deconstructing Data Localization in India" workshop 2019, organized by Carnegie Endowment for International Peace, India (December 4 to 6, 2019)
- "Brain, Computation, and Learning (BCL) workshop 2019, organized by EECS at Indian Institute of Science, Bangalore (January 24 to 26, 2019)
- "Data Science Symposium, 2017" organized by the department of "Computational Data Science" (CDS) at the Indian Institute of Science, Bangalore (February 24-25, 2017)
- "Internet of Things (IoT): Smart Innovation & Uses" symposium, organized by TEQIP II in association with IEEE section, India (April 22 -23, 2016)
- "Wavelet and its application in engineering problem", symposium, organized by TEQIP in association with IEEE section, India (December 20-21, 2015)

B.TECH. MAJOR PROJECT

- "Reliable Energy Balance Model for Wireless Sensor Network"- Extended my minor project and attempted to address the energy imbalance by using adaptive sensing and transmission without compromising coverage and connectivity. This approach fairly equalizes energy consumption by different sensors and improves the network's lifetime.
- "Dynamic Clustering Head Node Selection Using Fuzzy C-Mean Algorithm"- This was my minor project in which I implemented (written code for simulation) the research paper authored by D.K. Lobiyal using NetSim Simulator.

AUDITED COURSES at INDIAN INSTITUTE OF SCIENCE, BANGALORE

- "Automation Navigation" [CP-313] advised by Mr. Raghu Krishnapuram at the Department of Robert Bosch Centre for Cyber-Physical Systems at the Indian Institute of Science, Bangalore (Aug – Dec 2019)
- "Design & Analysis of Algorithms" [E0-225], advised by Prof. Arnab Bhattacharyya & Prof. Anand Louis at the Department of Computer Science and Automation(CSA) at the Indian Institute of Science, Bangalore (Aug – Dec 2017)
- "Machine Learning with Large Data Sets" [DS-222], advised by Prof. Partha Pratim Talukdar at the Department of Computational Data Science (CDS) at the Indian Institute of Science, Bangalore (Aug- Dec 2017)

COURSERA COURSES WITH CERTIFICATE

- "Introduction to Cyber Attacks, Countermeasures, Real-Time Cyber Threat Detection and Mitigation, and Infrastructure Security offered by New York University. (In Progress)
- "Introduction to High-Performance and Parallel Computing" offered by the University of Colorado Boulder. (Status – In progress….)
- "Crash Course on Python" offered by Google (Status: Completed with 100% marks)
- "System Administration and IT Infrastructure Services" offered by Google (Status: Completed with 95% marks)
- "Google Ads for Beginners" offered by Coursera Project Network (Status: Completed with 100% marks)
- "Consonants of American English Pronunciation" offered by the University of California, Irvine (Status: Completed with 94% marks)