HIRAK MONDAL

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Academic Qualifications

Year	Degree/Certificate	Institute	CPI/%
2020 - Present	M.Tech. (CSE)	Indian Institute of Technology, Kanpur	8.00/10
2020	B.Tech. (CSE)	University of Engineering and Management, Kolkata	9.17/10
2016	HSE West Bengal State Board	Patha-Bhavan, Kolkata	83.40%
2014	SE West Bengal State Board	Patha-Bhavan, Kolkata	88.40%

Master Thesis Project

- P^3-**AID: P**UF based **P**rivacy **P**reserving **A**uthentication for **I**nternet of **D**rones | Guide: Dr. Urbi Chatterjee *(March'21-Ongoing)*
  - Working on lightweight unique identification mechanism of the UAV platforms
  - Devising efficient key management of thousands of such platforms in case deployed in large scale
  - Implementing an FPGA based PUF design and developing a privacy-preserving anonymous authentication protocol with the companion embedded computer

Course Projects

- **Optimizations for Improved Performance of Codes** | Programming for Performance (CS610) *(Sep'20-Dec'20)*
  - Optimized common loop patterns with the help of vectorization, loop transformation, and intrinsics
  - Worked on code parallelization using OpenMP
  - Performed blocking style parallelism using Intel TBB
  - Worked on code parallelization and optimization using CUDA kernel
- **Temperature Reading Analysis using MPI Methods** | Parallel Computing (CS633A) *(March'21-April'21)*
  - Designed a parallel program that takes temperature reading of several years of several thousand stations(each station is identified by latitude and longitude) and calculated (a)Year-wise minimum temperature across all stations for each year (b)Global minimum across all stations and all years
  - Performed data distribution using MPI
  - Analyzed the scaling of the code on 1 and 2 nodes with 1, 2 and 4 cores per node
- **Non-Cache Model Architectures and CDF Analysis** | Advanced Computer Architecture (CS622A) *(Oct'20-Nov'20)*
  - Conducted studies to understand the reuse and sharing profiles of a set of parallel program
  - Instrumented these shared-memory parallel programs using PIN and captured the per-thread memory access traces
  - Analyzed the traces of four programs by simulating a machine with no-cache
  - Analyzed our results on that cache less simulated system and derived the Cumulative Density Function of the misses
  - Gained insights from the analysis and introduced a cache in our simulation model, trying to observe how by this new change the system is benefited
- **Encryption and Decryption Scheme for Software Security** | Modern Cryptology (CS641) *(Jan'21-May'21)*
  - Implemented Substitution Cipher
  - Implemented Playfair Cipher
  - Implemented 6-Round DES
  - Implemented RSA Encryption

Self Projects

- **Credit Card Approval Prediction Using Generalized Linear Model** *(Dec'20-Jan'21)*
  - Designed a logistic regression model for credit card approval prediction
  - Performed data pre-processing from scratch
  - Performed feature selection and fitting the logistic regression model to the data
  - Optimized the performance using GridSearchCV()

Technical Skills

- **Languages:** C, C++, Familiarity with- Python, MySQL, Java
- **Tools & Frameworks:** OpenMP, CUDA, IntelTBB, Intel MPI, Intel Pintool, Nmap, Wireshark, LaTeX

Position of Responsibility & Scholastic Achievements

- Teaching Assistant, Fundamentals Of Computing (ESC101), IIT Kanpur *(Jul'21-Present)*
- Secured AIR 111 in JEST 2020 Theoretical Computer Science Examination *(Feb'20)*

Relevant Courses

Advanced Computer Architecture (CS622A)	Modern Cryptology (CS641A)
Computer Systems Security (CS628A)	Programming for Performance (CS610A)
Introduction to Machine Learning (CS771A)	Parallel Computing (CS633A)