HIRAK MONDAL

Senior Engineer
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Work Experience

Senior Engineer(Speech AI) , Samsung Research Institute Bangalore

- Developed and executed enGB models for Bixby in both Samsung S23 and S24 flagship devices.
- Implemented Bixby Text to Call (BTC) feature for enIN and enGB locales.
- Worked on Named Entity Recognition(NER) and Named Enitity Correction (NEC)
- Part of a 2 member research team, actively researching for G2P alternative of Double Metaphone Based NEC.

Academic Qualifications

Year	Degree/Certificate	Institute	CPI/%
2022	M.Tech. (CSE)	Indian Institute of Technology, Kanpur	8.28/10
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%

Publication

"Revisiting UAV Authentication Schemes: Practical Attacks on Aviation Infrastructure", AsianHOST, Dec 2021

- Co-authored by Dr. Urbi Chatterjee, Assistant Professor, Dept of CSE, IIT Kanpur
- Detected vulnerabilities in existing authentication mechanism for UAVs
- Explored PUF based security solutions to mitigate the same

Course Projects

- **Snort Based Intrusion Detection ft. ML Models** | Malware Analysis and Intrusion Detection (CS658A) (*Jan'22-Apr'22*)
  - Trained ML models on publicly available dataset (NSL-KDD) for Network intrusion detection
  - Performed real time DoS (syn flood) attacks from Kali Linux Machine to Ubuntu Machine
  - Used Snort to capture the packets, preprocessed it to get connection information and applied ML models on it to detect the attacks
- **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
- **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
- **Credit Card Approval Prediction Using Generalized Linear Model** (*Sep'20-Dec'20*)
  - 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++, Python; Familiarity with- MySQL, Java
- **Tools & Frameworks:** Tensorflow,PyTorch,Hugging Face, SciKit Learn, Pandas, Matplotlib, OpenMP, CUDA, IntelTBB, Intel MPI
- **Operating System:** Linux

Position of Responsibility & Scholastic Achievements

- Secured AIR 111 in JEST 2020 Theoretical Computer Science Examination (*Feb'20*)
- Teaching Assistant, Fundamentals Of Computing (ESC101), IIT Kanpur (*Jul'21-Jul'22*)