Yuvraj Talukdar

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Experience

- **CR RAO AIMSCS · Internship (April 2022 - June 2023)**:
  - **Work Area:** Cryptanalysis
  - **Duty:**
    - Use different ML algorithm for analysis.
    - Work with MPI for parallelizing some algorithms and running them on HPC.
    - Implement a novel ML algorithm in CUDA.
    - Analysis of several text data and using clustering algorithms to create clusters.
    - Writing a transformer model for generating new data.
  - **Tools:** Tenforflow, Keras, Scikit-Learn, CUDA, MPI, pthread
- **Freelance Work (Android Development) (November 2021)**:
  - **Work Area:** Java/Kotlin based Android Development
  - **Duty:**
    - Implementing several new features in an already existing java based android app.
    - Improving the stability of the app and fixing bugs with firebase connection.
    - Revamping and modernising the app UI.
  - **Tools:** Flutter, postman, Android Studio

Education

- **Indian Institute of Technology Madras (2023-Ongoing)** Tamil Nadu, India
  Doctor of Philosophy(Ph.D)- ***CGPA: 8.25/10***
  Courses: *Secure Systems Engineering, Secure Processor Microarchitecture, Advanced Programming, Recent Topics in Compilers*
- **University of Hyderabad (2021-2023)** Telangana, India
  Masters of Technology(M.Tech) - Information Security, ***CGPA: 9.69/10 Gold Medalist*** *2023*
  Courses: *Cryptography, Maths, Ethical Hacking, Advanced Computer Network, Big Data, Reverse Engineering and Malware Analysis, Blockchain, Secure Tools and Technology, Cloud Computing*
- **SRM Institute of Science and Technology (2016-2020)** Tamil Nadu, India
  Bachelor of Technology(B.Tech) - Computer Science and Engineering, ***CGPA: 78.22%*** *2022*
  Courses: *Computer Graphics, Operating Systems, Data Structures, Analysis of Algorithms, Computer Networks, SQL, TOC*
- **Faculty Higher Secondary School (2014-2016)** Assam, India
  XII Std, ***62%*** *2022*
- **Faculty Higher Secondary School (2014)** Assam, India
  X Std, ***8.4/10*** *2022*

Skills Summary

- **Languages**: C, C++, Python, JAVA, Kotlin, Dart, JavaScript
- **Tools**: Clang, GDB, GCC, CUDA, CUDA-GDB, pwntools, Valgrind, KVM, GIT, Wireshark
- **Libraries**: LLVM, Scikit-Learn, Tensor Flow, Keras, OpenCV, cryptopp, QT, GMP, Boost, ReactJS, Electron, visjs
- **Platforms**: Linux (I use Arch btw), Windows

Publications

- **A Novel approach for Training Neural Network using Linear Programming**: Published in- International Journal of Advanced Science and Technology (SCOPUS) Link- http://sersc.org/journals/index.php/IJAST/article/view/8621

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- **Classifier software using neural network and LP solver Classifier software using neural network and LP solver**: IN SW-12271/2019 · Issued Jan 3, 2019
- **Classifier Software Using Neural Network And LP Solver Version 2**: Diary No- 16114/2023-CO/SW

Paper Presentations

- **22nd Intelligent Systems Design and Application (ISDA22)**: Presented my paper "ML Classifier using Multiple Neural Network Trained by Linear Programming Link- https://link.springer.com/chapter/10.1007/978-3-031-35507-3_39

Projects

- **Kernel Instrumentality Project (Ongoing Project as part of Ph.D)**: A source to source compiler for CUDA, which enables transforming non-compatible CUDA programs (due to lack of register resource) to a compatible version while preserving the intended output of the program.
  Tech: C++ std 20, Clang, LLVM
- **A Novel approach for Training Neural Network using Linear Programming(Non Backpropagation Neural Network)**: This is a novel algorithm for machine learning based on a novel neural network architecture, which make use of linear programming for the optimization process. Its main advantage is that while training this network on a data-set we only need to run it for one iteration, and it manages to deliver descent accuracy with less data.
  https://github.com/YuvrajTalukdar/Non-Backpropagation-Neural-Network
  Tech: C++ std 17
- **ML Classifier using Multiple Neural Network Trained by Linear Programming (Core Generating Network)**: This this the version 2 of the "A Novel approach for Training Neural Network using Linear Programming". This provided a massive improvement over its predecessor and proves neural network trained using LP can come close in performance to existing methods.
  Tech: C++ std 17
- **ML Classifier using Multiple Neural Network Trained by Linear Programming CUDA Edition**: This is the CUDA implementation of the project "ML Classifier using Multiple Neural Network Trained by Linear Programming"
  Tech: C++ std 17, CUDA
- **AssameseWikiGPT**: A transformer model trained on the entire Assamese language Wikipedia.
  https://huggingface.co/YuvrajTalukdar/AssameseWikiLanguageModel/tree/85a4cda5116bb23406c6334fb507f9fe4e0a9676
  Tech: Python, Tensorflow, Keras
- **OSIRIS (Open Source Information Research and Intelligence System)** : OSIRIS is an open source app written in JS and C++ using electron for the body, ReactJS for the frontend and C++ in the backend for storing and researching on events or relations.
  https://github.com/YuvrajTalukdar/OSIRIS
  Tech: C++, cryptopp,ReactJS, Electron, MaterialUI, VisJS, JavaScript.
- **Modified sobel edge detector version 1**: It is a layer above the sobel edge detection algorithm which further enhances the results from the sobel edge detector.
  https://github.com/YuvrajTalukdar/modified-sobel-edge-detector
  Tech: C++, OpenCV
- **Modified sobel edge detector version 2**: Compared to version 1 this better detects fuggy borders.
  https://github.com/YuvrajTalukdar/modified-sobel-edge-detector-version2
  Tech: C++, OpenCV
- **FileCrypt and FileCrypt Native** : FileCrypt is a flutter based android application which helps you to securely encrypt your files in a value. FileCrypt Native is the same app but written in java and is much faster than Flutter version.
  https://github.com/YuvrajTalukdar/FileCrypt
  https://github.com/YuvrajTalukdar/FileCryptNative
  Tech: JAVA, Dart, Flutter, AndroidSDK

Links

- **GitHub**: https://github.com/YuvrajTalukdar
- **LinkedIn**: LinkedIn Profile:// Yuvraj Talukdar