RUSHIL VENKATESWAR

A-411, LBS Hall of Residence, IIT Kharagpur, West Bengal, India - 721 302 | **+91 87893 09659**

✉ rushilv14@gmail.com | ⊞ rushilv4102 | ⚙ rv4102 | </> rushilv

EDUCATION

Degree	Institute	Year	CGPA / %
Dual Degree in Computer Science & Engineering	IIT Kharagpur	2020 - 2025	**8.79 / 10**
Indian School Certificate	Little Flower School, Jamshedpur	2018 - 2020	**96.25%**
Indian Certificate of Secondary Education	Little Flower School, Jamshedpur	2007 - 2018	**95.40%**

RESEARCH EXPERIENCE

Semantic Segmentation of Remote Sensing Images (*Dr. Debasish Chakraborty, ISRO*) ⚙ **Apr '22 - ongoing**
- Studied existing literature on CNNs, deep learning and their usage in the remote sensing context.
- Using the Tensorflow framework, built a U-Net like model with improved performance and a fraction of the number of parameters as the original U-Net.
- Created various other scripts to perform inference on variable sized images. Tested on Indian context images taken from Google Earth.

Development of a Python Tutor (*Prof. P. P. Das, IIT Kharagpur*) **May '22 - July '22**
- Used Protégé for making an ontology for Python language. Explored OWLReady python package to create ontologies.
- Implemented Frequent Itemset Mining and used it to perform query expansion.

PROJECTS

Instance Segmentation and Detection, (*Software Engineering Lab*) ⚙ **Spring '22**
- Developed a **Tkinter based GUI** to display bounding boxes or segmentation masks for the image selected.
- Used a pre-trained MaskRCNN model from Pytorch library to generate **masks** and **bounding boxes** for a given image and used **matplotlib** to plot them.
- Created a **python package** from source code.

KGP-miniRISC Processor, (*Computer Organisation Lab*) ⚙ **Autumn '22**
- Developed a 32-bit word length **single-cycle** instruction execution unit. Hence there is no state and the design is purely combinational.
- Successfully dumped the bitstream onto a **Nexys A7 FPGA board** using Xilinx ISE and ran programs (written in assembly) such as sorting and linear search.
- Clock frequency determined by the single longest instruction in the given ISA.

Students' Auditorium Management Software, (*Software Engineering Lab*) ⚙ **Spring '22**
- An **auditorium management website** which runs on Localhost (127.0.0.1) and allows the user to maintain a database of shows to be screened along with providing functionality for seat booking.
- **OTP-based login** for users of the software is supported.
- Implemented a website using **Python Flask** for back-end and **bootstrap** for front-end.

AWARDS & ACHIEVEMENTS

- Secured an **All India Rank** of **473** in JEE Advanced 2020 (out of 1,60,000 candidates).
- Secured an **All India Rank** of **1176** in JEE Mains 2020 (out of 1.12 million candidates).
- Qualified for KVPY Round 2 in SA Stream in 2019.
- Selected out of 3000 IITians for attending **Optiver Winter School** conducted by IIT Delhi.
- **1st Position** in **National Science Day Quiz**, conducted by Gymkhana, IIT Kharagpur.
- **2nd Position** in **Science of Paper Folding**, conducted by Space Technology Students' Society, IIT Kharagpur.
- Secured **498 Rank** out of more than 5000 teams in **ACM ICPC Preliminary Online Round**.

COURSEWORK INFORMATION

University Credit Courses: Algorithms, Programming and Data Structures, Software Engineering, Systems Programming Lab, Discrete Structures, Statistical Inference, Probability & Statistics, Linear Algebra, Compilers, Computer Architecture
MOOCs: Machine Learning (**Andrew Ng**), Deep Learning Specialization (**DeepLearning.AI**)

SKILLS & EXPERTISE

Languages/ OS : C, C++, Python, Java, LaTeX, MATLAB, MIPS, Verilog, macOS
Tools : Git, Jupyter Noteboook, Google Colaboratory, VSCode, Shell scripting
Libraries & Frameworks : C++ STL, NumPy, Pandas, Matplotlib, Scikit, OpenCV

POSITIONS of RESPONSIBILITY

Associate Member at Business Club, IIT Kharagpur **Dec '20 - Sep '21**
- Authored a **Whitepaper on XGBoost** ❖.
- Conducted a webinar on Cryptocurrency with Dr. Akshat Shrivastava as the guest lecturer.
- Participated in an intra-club case study competition and guided newly inducted teammates.