DEEPAK KUMAR

ACADEMIC DETAILS

Year	Degree / Board	Institute	GPA / Marks(%)
---	M.Tech in Computer Technology	Indian Institute of Technology, Delhi	7.704
2011	Bihar State Board	K.P.S College, Nadwan	80.4%
2013	Bihar State Board	High School, Dumri	79.8%

DEGREES PRIOR TO IIT

Year	Degree	Institute	GPA / Marks(%)
2017	B.Tech in Electrical Engineering	Indian Institute of Technology, Patna	6.98/10

IIT DELHI THESIS

• **Samsung Research Instiute, Delhi** (April, 2019 - Present) *Audio Source Separation Using Visual Correspondence*

• **Supervisor :** Dr. A.P Prathosh, Professor, Indian Institue of Technology, Delhi

- Developing a deep learning model to separate the desired object's sound from input audio mixture using visual supervision
- **Audio module** (based on U-Net) extracts audio features, **Visual module** (based on Resnet) extracts visual features of masked object (using maskRCNN) and **Synthesizer** combines both the features to obtain audio mask of the required object

PROJECTS

• **Performance analysis of CPU scheduling algorithms** *(Mar, 2019)*

- Simulated different CPU scheduling algorithms: FIFO, Round-Robin, SJF, Priority-based Scheduling, Multi-Level Queue
- Compared their performance based on average waiting time and turn-around time of the scheduled processes

• **A Simple Shell with FTP client-server application** *(Jan, 2019 - Feb, 2019)*

- Designed a Simple Shell in C++ that equips with commands like *pushd* , *popd* , *dirs* , *path* and file handling operations.
- Implemented an ftp server with multiple clients using sockets to access the files or transfer it to/from the server

• **Branch Predictor** *(August, 2018)*

- Implemented the branch prediction models in Java using Gshare and PAP model to predict the direction of branch which exploits both global and local history of branches and achieved accuracy of 96.636% on sample traces

• **Brain tumor classification and segmentation on BRATS-2015 dataset** *(Feb, 2019 - Mar, 2019)*

- Designed a CNN based model to predict the presence of tumor in MRI scans in which classes are highly imbalanced
- Developed an algorithm for segmentation of brain tumor tissues based upon thresholding, morphological operations and k-means clustering in MATLAB and achieved Dice-coefficient over 75% on 10 patients with respect to ground masks

• **Neural Network and Convolution Neural Network (CNN) for multi-class classification** *(Feb, 2019)*

- Implemented SVM classifier, Softmax classifier, multi-layer fully connected classifier and CNN classifier in python
- Implemented Batch Normalization and regularization techniques like L1, L2 and Drop-out for training deep neural network

• **Convex optimization based on Interior-Point Method algorithms** *(Oct, 2016 - Mar, 2017)*

- Implemented a program based on Interior-Point-Methods to solve the given objective function in polynomial time

TECHNICAL SKILLS

• **Programming Languages** : C/C++, Java *(basic)* , Python, MATLAB

• **Libraries** : Pytorch, Keras, NumPy, Sci-kit learn, OpenCV

• **Software tools** : Eclipse, GDB, Latex, Doxygen, Git, Jupyter

POSITIONS OF RESPONSIBILITY

• **Teaching Assistant** (Aug, 2019 - Nov, 2019) : Introduction to Machine Learning (ELL784), IIT Delhi

- Evaluated assignments and exam scripts and cleared the doubts of students on *Piazza*

• **Teaching Assistant** (Jan, 2019 - May, 2019) : Intoduction to Electrical Engineering (ELL100), IIT Delhi

- Guided students to do experiments, evaluated the reports and helped them with their projects

SCHOLASTIC ACHIEVEMENTS

• Recipient of **Merit-Cum-Means** scholarship awarded yearly by **IIT Patna** from 2013 to 2017

• Secured All India Rank **5450** and State Rank **138**, Bihar in **JEE Main-2013** exam among 1.4 million appeared students

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IIT COURSE

Degree	Institute	GPA
M.Tech in Computer Technology	Indian Institute of Technology, Delhi	7.704

COURSES DONE

Mathematical Foundations Of Co, Software Fundamentals For Comp, Computer Architecture, Operating Systems, Introduction To Machine Learni, Embedded Systems And Applicati, Advanced Machine Learning