Abantika Basak

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EDUCATION

Master of Science in Computer Science **Expected May 2021**
Arizona State University, Tempe, Arizona, USA GPA: 3.94
Relevant coursework :- Data Processing at Scale, Mobile Computing, Software Verification Validation and Testing
Bachelor of Technology in Computer Science and Technology **May 2019**
Bengal Engineering and Science University, Shibpur, Howrah, India GPA: 3.9

TECHNICAL SKILLS

Languages : Python, C++, C, SQL, Java, Clingo, Prolog, Scala
Tools, Databases and OS: Perf, Apache Spark, Hadoop, MapReduce, PostgreSQL, Amazon Web Services, Linux, AndroidStudio, Firebase, MySQL, JUnit, Rouge,Weka, Latex, Git, QGIS, Lex, Yacc, Audacity, MS Office
ML Libraries: Tensorflow, Keras, OpenCV, Numpy, Matplotlib, Scipy, gTTS, Pandas, Scikit-learn, ImageIO, Librosa, Kivy

ACADEMIC EXPERIENCE

Computer Vision Summer Project, Arizona State University, AZ, USA **May 2020 - Aug 2020**
Python | OpenCV | Keras | ImageIO | Pandas | Numpy | gTTS | Kivy | Microsoft VoTT
- Developed a desktop application for object detection using YOLOv3
- Implemented a two-stage object detector “Regions with CNN” from scratch
- Created custom dataset with annotation and fine-tuned YOLO on them for car license plate detection
- Performed FPS comparison of YOLO, tiny-YOLO, SSDMobileNet, SSD300 and Mask RCNN

Indian Academy of Sciences Summer Research Fellow, Indian Institute of Technology, Kharagpur, WB **May 2017 – Jul 2017**
Cryptography | C
- Developed **Authenticated Encryption in Galois Counter Mode** from scratch (Lines of Code – 1500 to 2000)
- Implemented self-taught crypto-algorithms for encryption including DES and AES from scratch

Summer Research Intern, Indian Institute of Technology, Kharagpur, WB, India **May 2018 - Jul 2018**
Python | NetworkX | QGIS | Spatial Informatics
- Developed an improvised version of the Dijkstra Algorithm for faster optimal safe path computation during floods
- Tested on the Bankura Road Network dataset visualised using QGIS

ACADEMIC PROJECTS

Data Processing at Scale Group Project, Arizona State University, AZ, USA **Mar 2020 - Apr 2020**
Apache Spark | Scala | Hadoop | MapReduce | Getis-Ord
- Performed hot-spot analysis on the NYC Taxi Trip Dataset
- Designed algorithm to get a list of top fifty statistically significant hotspots using Getis Ord statistic on same data

Mobile Computing Group Project, Arizona State University, AZ, USA **Oct 2019 – Nov 2019**
Java | AndroidStudio | Firebase
- Built functionalities for Android application that finds the safest path from current location to given location by mining crime log data for the area of Tempe
- Implemented the sign up, sign in, and sign out functionality for the app
- Plotted statistics which shows the frequency of occurrence of different types of crimes in the Tempe Area
- Performed integration of all components developed by group members on AndroidStudio to build the resulting app

Statistical Machine Learning Group Project, Arizona State University, AZ, USA **Oct 2019 – Nov 2019**
Python | Keras | Tensorflow | Pandas | Scikit-learn | Matplotlib | Numpy | Librosa
- Built two deep learning models for music genre classification
- Extracted mel-spectrograms from audio files and performed data-preprocessing to obtain training and testing datasets
- Trained a **Convolutional Neural Network** and a **Convolutional Recurrent Neural Network** on this dataset

Data Intensive Systems for Machine Learning Group Project, Arizona State University, AZ, USA **Apr 2020 - May 2020**
Python | Tensorflow | Perf
- Performed detailed study of memory allocation in **Deep Learning** Systems on different workloads to optimize memory allocation and movement overheads
- Analysed memory related overhead while running **Deep Learning** workloads like ResNet, BERT, CNN and VGG19 with Tensorflow backend during different stages of execution

Knowledge Representation Group Project, Arizona State University, AZ, USA **Oct 2019 - Nov 2019**
Answer Set Programming | Clingo
- Designed algorithm to solve the **Insurance Referee Assignment problem** which optimises the assignment of referees to different insurance cases at different locations as per hard and weak constraints
- Implemented three hard constraints and two weak constraints and validated other constraints implemented by other group members