AMITOJDEEP SINGH

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Computer Science and Economics Student

Education

2014 - 2019
B.E. (Hons.) Computer Science & M.Sc. (Hons.) Economics
Birla Institute of Technology and Science, Pilani
Masters and Bachelorsdegree as a part of dual degree programme
CGPA 9.05/10.00

2013 - 2014
All India Senior School Certificate Examination (C.B.S.E. Class 12)
Stepping Stones Sr. Secondary School, Chandigarh
Percentage: 92.4%

2011 - 2012
All India Secondary School Examination (C.B.S.E. Class 10)
St. Joseph's Sr. Secondary School, Chandigarh
CGPA 10.00/10.00

Technical Skills

Languages: Python, C, C++, JAVA, SQL, Scheme, Prolog, MASM

Major Courses: Data Structures and Algorithms, Object Oriented Programming, Database Systems, Operating Systems, Machine Learning, Information Retrieval, Computer Architecture

Frameworks: TensorFlow, Theano, Keras, OpenCV, PIL, NumPy, SciPy, Graphlab Create, Verilog, Proteus

OS: Linux, Windows, Android

Experience

June 2017 - July 2017
Summer Research Intern
Central Scientific Instruments Organisation (CSIR-CSIO), Chandigarh
CSIR-CSIO is a national laboratory dedicated to research, design and development of scientific and industrial instruments
- Deep Convolutional Neural Networks for Traffic Sign Recognition and Detection on GTSRB benchmark, adapted for traffic signs of Chandigarh using transfer learning
- 3D Convolutional Neural Networks for lung nodule detection on LUNA!6 dataset

May 2016 - July 2017
Software Development Intern
Yrals Digital, Mumbai
Yrals Digital – A tech media startup with Machine Learning & Artificial Intelligence powered Content Engine called GistAI
- Content Aware Image Processing for live execution on themedia engine using PIL & OpenCV
- Data Mining and Natural Language Processing for content generation & augmentation using Beautiful Soup, Named Entity Recognition (NER), NLTK and dbpedia

Projects

August 2017 - December 2017

Neural Networks for Stock Price Prediction

- Designed a Multimodal and Multitask Deep Learning Model to predict stock price movement and volatility using Price data and News Headlines
- Achieved a prediction **accuracy of 74.93%** for price movement direction and **MSE of 0.0017** for volatility

[Report, Code]

June 2017 - July 2017

Deep Convolutional Neural Networks for Traffic Sign Recognition

- Achieved **99.38% classification accuracy** using ensemble of VGG inspired model instances with added batch normalization layers
- **Ranked 7th internationally** on the GTSRB benchmark, beating any human performance based approach

[Report, Code]

January 2017 - December 2017

ATU: Adaptive Template Update for Constructive Fingerprint Identification

- Minutiae points were mosaicked using Thin Plate Spline transformation to mimic natural deformation during registration.
- High confidence test fingerprints were used to update the database to improve the accuracy.
- Achieved **100% CRR and 20% EER** for fingerprints of 100 users of *FVC 2004 database*.

[Paper, Code]

October 2017 - Novemeber 2017

Semantic Similarity Analyser and Predictive Typing System

- Used **Manhattan LSTM** to predict semantic similarity of two query phrases
- **Google word2vec** was used to generate embeddings of query phrases
- Achieved an **accuracy of 80.35%** on *Quora Duplicate Questions Dataset*
- Used Semantic Similarity as an approach for Predictive Typing

[Report, Code]

January 2018 - Present

Multi-person Pose Estimation for Real Time Video

- Using *VGG 19* outputs of video frame by frame to extract key points and match them using Part Affine Fields
- Implementing the system on Android based device for practical application

Achievements

June 2017 -

German Traffic Sign Recognition Benchmark

GTSRB

Achieved **7th rank** internationally beating all human performance based techniques

2013 -

KVPY Mentorship Award

Indian Institute of Science (IISc)

Awarded the Kishore Vaigyanik Protsahan Yojana mentorship, **Top 400 out of 100,000 students**

Volunteer Experience

May 2016 - April 2017

Financial Head

Economics and Finance Association, BITS Pilani

Raised, managed and allocated funds & resources for the semester events and year-round operating expenses, organised lecture series, seminars and events, led a team of 40+ members

2014 - Present

Member

Photography Club, BITS Pilani