AMITOJDEEP SINGH
MALE, 21 YEARS
B.E.(Hons.) COMPUTER SCIENCE & M.Sc.(Hons.) ECONOMICS (2014-2019)
CGPA: 9.05

EDUCATION

AISSCE (Class XII)	2014	Stepping Stones Sr. Secondary School, Chandigarh	92.4%	3/70
AISCE (Class X)	2012	St. Joseph's Sr. Secondary School, Chandigarh	10 CGPA	1/200

TECHNICAL PROFICIENCY

- **Major Courses**: Data Structures and Algorithms, Object Oriented Programming, Database Systems, Machine Learning(Coursera), Deep Learning, Information Retrieval, Operating Systems, Computer Architecture
- **Programming Languages:** C, C++, Python, JAVA, Android Development, HTML, SQL, Prolog, MASM
- **Software & Libraries:** TensorFlow, Theano, Keras, OpenCV, PIL NumPy, SciPy, Graphlab Create, Verilog, Proteus

INTERNSHIPS

Summer Research Intern, **CSIR-CSIO,** Chandigarh — June 2017-July 2017

CSIR-CSIO – Central Scientific Instruments Organization is a national laboratory dedicated to research, design and development of scientific and industrial instruments

- **Deep Convolutional Neural Networks** for **Traffic Sign Recognition** using GTSRB Dataset
  - Achieved **99.38% classification accuracy** using **ensemble** of **VGG** like model instances with added **batch normalization** layers
  - **Ranked 7th internationally** on the GTSRB benchmark, beating any human performance based approach
- Designed **Live Traffic Sign Detection System** on Android platform using image segmentation technique on real time image feed
  - Real dataset was obtained for traffic signs in Chandigarh & **color segmentation** with **OpenCV** was used to obtain bounding box for traffic signs
  - **Histogram of Gradients (HOG)** & **Support Vector Machine (SVM)** were applied and accuracy was further benchmarked on GTSDB as well as on the live feed generated by android based camera system
- **3D Convolutional Neural Networks** for lung nodule detection
  - **Detected lung nodules** from given candidate points of LUNA16 lung cancer database
  - Automatic Lung Segmentation & Voxel normalization wer done for improved feature learning

Professional Recognition:

- Letter of Recommendation from **Amitava Das, Principal Scientist**, CSIO-CSIR, Chandigarh

Software Development Intern, **Yrals Digital,** Mumbai — May 2016-July 2017

Yrals Digital – A tech media startup with Machine Learning & AI based Content Engine called GIST

- **Automated Image Processing** for live execution on the content engine
  - **PIL & OpenCV** were used, resulting in **400% efficiency gain** over the existing technique
  - Led to significant revenue gain for the firm due to **75% reduction** in AWS bills & improved aesthetics
- **Data Mining** and **Natural Language Processing (NLP)** for content generation & augmentation
  - Beautiful Soup was used for **web scraping** of sports statistics; automated match analysis and number of the day generator tools were designed
  - **Named Entity Recognition (NER)** using hybrid of database(dbpedia) & machine learning(NLTK), used faster ML based **NLTK** approach for initial recognition & more accurate **dbpedia** recognition for validation

PHONE +91 99280 25123• EMAIL f2014615@pilani.bits-pilani.ac.in
ROOM NO. 109, ASHOK BHAWAN, BITS-PILANI, RAJASTHAN – 333 031

ACADEMIC PROJECTS

- **Neural Networks for Stock Price Prediction**: Designed a **Multimodal and Multitask Deep Learning Model** that took Price History and News as two modalities and predicted the results as Price Movement Direction and Volatility. Model outperformed a multilayered **1D CNN** model to achieve a prediction **accuracy of 74.93%** for predicting price change direction and **MSE of 0.0017** for volatility.

- **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**.

- **Semantic Similarity Analyzer and Predictive Typing System:** Used **Manhattan LSTM** to predict semantic similarity of two sentences, achieved an **accuracy of 80.35%** on Quora Duplicate Questions Dataset, semantics similarity between current sentence and sentences in corpus was used for predictive typing and it outperformed statistical techniques.

- **Multiperson Pose Estimation for Real Time Video:** Ongoing project, 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.

- **Smart AC System using 8086 Microprocessor:** Designed the system to control air temperature using temperature sensors & motor controlled valves on **Proteus ISIS-7**; programmed in **assembly language** and successfully simulated meeting the requirements of Microprocessors Course

- **Logic Programming** using **SWI Prolog:** Implemented Symbolic Algebra Operations & BITS Academic Regulations using horn clauses in Prolog, successfully completed meeting partial requirements of Logic in Computer Science course

ACADEMIC ACHIEVEMENTS AND AWARDS

- Achieved **7th** rank internationally on **German Traffic Sign Recognition Benchmark** beating all known human performance based techniques

- Awarded the **Kishore Vaigyanik Protsahan Yojana (KVPY) mentorship** by the **Indian Institute of Science(IISc), Bangalore** for excellence in academics, 2013

- Selected to participate in **National Science Camp** (Vijyoshi 2013) held at the **Indian Institute of Science(IISc), Bangalore,** 2013

- Awarded Achievement Certificate for **Co-Scholastic Activity in IT** by St. Joseph's Sr. Sec. School, 2010

POSITIONS OF RESPONSIBILITY

- As **Financial Head** for **Economics & Finance Association, BITS Pilani Year 2016-17**
    - Raised, managed and allocated funds & resources for the semester events and year-round operating expenses
    - The association was able to raise revenues worth ₹70,000 from the sale of merchandise
    - Organizing lecture series, seminars & events

EXTRA-CURRICULAR ACTIVITIES AND ACHIEVEMENTS

- Member of Photography Club, BITS Pilani since 2014
- My hobbies are photography, travelling, learning about technology & playing badminton

PHONE +91 99280 25123• EMAIL f2014615@pilani.bits-pilani.ac.in
ROOM NO. 109, ASHOK BHAWAN, BITS-PILANI, RAJASTHAN – 333 031