Jivat Neet Kaur

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Education

Birla Institute of Technology and Science (BITS), Pilani, Pilani, India *2017 - 2021 (Expected)*
Bachelor of Engineering in Computer Science
CGPA: 9.06/10
- Recipient of Institute Merit Scholarship for excellent academic performance

Experience

Language Technology Lab, Universität Hamburg, Germany
Research Intern, Guide: Prof. Dr. Chris Biemann *Oct 2020 - Present*
- Working on question answering over **Hyper-Relational Knowledge Graphs**

Web Intelligence and Social Computing (WISoC) Lab, BITS Pilani, India
Research Assistant, Guide: Dr. Yashvardhan Sharma *Aug 2020 - Present*
- Developing a **Question Answering system** with Multilingual support using **SQuAD 2.0** Dataset
- Implementing **bi-directional contextual representation** models - BERT, ALBERT and RoBERTa
- Built and integrated an **FAQ retrieval system** using query-question similarity and query-answer relevance
- Designing a web interface for the model that provides the user with **Text-to-Speech** conversion support

Microsoft, Bangalore, India
Software Engineering Intern *May 2020 - Jul 2020*
- Implemented **Active Monitoring** and developed **Python** probes for **Outlook Calendar REST API** operations in **Cloud Cache** in order to decrease the **Mean Time to Detect** (MTTD) failure
- Reduced manual testing hours by **9%** by solving issues faced by engineers in reproducing errors
- **Improved user experience** of Outlook mobile application by ensuring resolving of errors before escalation

MapmyIndia, Delhi, India
Computer Vision Intern *May 2019 - Jul 2019*
- Developed an **Object Detection Model** for detection and recognition of sign boards from photographs
- Adapted the **RetinaNet** one-stage detector architecture and improved the pre-processing steps to reduce false positives significantly and achieve mAP of **0.42**
- Adopted **U-Net** with pre-trained **VGG-16 encoder** for building segmentation in 3-channel satellite images

Publications

- Vishnu Katkoori, **Jivat Neet Kaur** and Tushar Goyal, **"Simulation and Selection of Detumbling Algorithms for a 3U CubeSat"**, presented in *International Astronautical Congress, Washington, D.C., Oct. 2019*

Projects

Health and Personalized Fitness Recommender System
Guide: Dr. Surekha Bhanot, EEE, BITS Pilani *Aug 2020 - Present*
- Working on personalized fitness recommendation based on data from wearable devices and user input
- Developing a **context-aware sequential model** to capture temporal dynamics of users' health patterns

Named-entity recognition (NER) *Course: NLP and Vision with Deep Learning*
Guide: Prof. Poonam Goyal, CS, BITS Pilani *May 2020- Jul 2020*
- Built a **multilayer feedforward neural network** to learn named entities from CoNLL 2003 dataset
- Trained word embeddings in **Python** using Word2Vec's **Skip-Gram model** and **GloVe**
- Incorporated **casing feature vector** and handled class imbalance in the dataset using **weighted cross-entropy loss**, leading to **16% improvement** in the **F1 score**

Compiler Design for a Custom Language *Course: Compiler Construction*
Guide: Prof. Vandana Agarwal, CS, BITS Pilani *Jan 2020 - Apr 2020*
- Developed a **fully functional compiler** from scratch (in C) capable of lexical analysis, syntax tree creation, semantic analysis, static and dynamic type checking and **generating executable assembly code**
- The artificial language supported constructs like dynamic memory allocation, loops, if-else ladders, switch statements, nested scopes and function calls

COVINFO Application
IBM Crack the Covid-19 Crisis Hackathon *Jun 2020 - Jul 2020*

- Developed a web application for **real-time hospital resource monitoring** (beds, ICUs, ventilators)
- Integrated a **mask detection model** to provide real-time information (stored in a NoSQL database on **IBM Cloudant**) regarding the percentage of people wearing masks at any location using live video feed

Activity Recognition in Video Images
Guide: Prof. Vandana Agarwal, CS, BITS Pilani *Aug 2019 - Dec 2019*

- Developed a model for labelling clippings of 51 action classes of **HMDB51** - a large human motion database
- Performed feature extraction using **Histogram of Oriented Gradients** (HOG) feature descriptor followed by activity classification using **Multiclass Support Vector Machine** (SVM) to achieve **65%** accuracy

Deep Learning EEG Response Representation for BCI *Course: Neural Networks and Fuzzy Logic*
Guide: Dr. Surekha Bhanot, EEE, BITS Pilani *Oct 2019 - Nov 2019*

- Built a **multi-scale** deep CNN architecture using **Keras** to learn Deep Motor Features for brain computer interface with imagined motor tasks
- Achieved **96%** accuracy for EEG signals classification of motor tasks in **BCI - EEG motor activity** dataset

Achievements and Awards

- **1** of **30 Google's Explore ML** with Crowdsource facilitators selected globally to train others in ML skills
- **1** of **250** Indian women students from computing backgrounds to be awarded **GHCI 2020** Scholarship
- **1** of **30** teams out of **1500** participants to reach grand finals of **Bengalathon** - a national hackathon
- Won the **3rd** place in Student Satellite Project Competition at **International Conference on Small Satellites**
- **1** of **20** (Top 2%) students to receive **Institute Merit Scholarship** for exceptional academic excellence
- **1** of **1500** students out of 1 lakh applicants to receive **KVPY Fellowship** 2016 for scientific research aptittude

Technical Skills

Programming Languages - Python, C, C++, Java, MATLAB, HTML, JavaScript, Prolog, Verilog
Libraries and Frameworks - Keras, scikit-learn, OpenCV, NLTK, Requests, Tensorflow, PyTorch

Mentorship Experience

Teaching Assistant *CS F415: Data Mining*
Prof. Poonam Goyal *First Semester, 2020-21*

Conducting lab sessions and creating learning resources in Python and IBM SPSS Modeler for the course

Teaching Assistant *BITS F312: Neural Network and Fuzzy Logic*
Prof. Surekha Bhanot *Second Semester, 2019-20*

Designed coding assignments for over 150 students and took workshops on Python Deep Learning Frameworks such as Tensorflow and PyTorch. Also guided them in their research paper implementations.

Key Courses Taken

Computer Science Engineering
Data Structures and Algorithms, Object Oriented Programming, Neural Networks and Fuzzy Logic, Data Mining, NLP and Vision with Deep Learning, Database Systems, Operating Systems, Image Processing

Mathematics & Other Courses
Linear Algebra, Number Theory, Probability and Statistics, Calculus, Differential Equations

Massive Open Online Courses
- Machine Learning by Stanford University (Coursera)
- Convolutional Neural Networks for Visual Recognition (Stanford)
- Deep Learning Specialization (Coursera)

Positions of Responsibility

- **Executive Committee Member, Team Anant**
  Team Anant is developing BITS Pilani's **first Nanosatellite** under **ISRO**'s Student Satellite Programme. Designed the **BDot law** to control the high angular velocity of the satellite after deployment.
- **Election Commissioner, BITS Pilani**
  Selected in the **3 member body** out of 1000 students for conducting elections to the BITS Students' Union.
- **Vice Captain, Basketball Team**
  Led the Girls' Basketball Team for Bits Open Sports Meet'18 (BOSM)- annual sports fest of Bits Pilani.