

Naveen Venkat

f2015078@pilani.bits-pilani.ac.in

[LinkedIn](#)

Education

Birla Institute of Technology and Science, Pilani

Aug 2015 – Present | B.E. (Hons.) Computer Science | CGPA: 8.11

- **Electives:** Artificial Intelligence, Data Mining, Pattern Recognition, Neural Networks and Fuzzy Logic, Linguistics, Appreciation of Indian Music, Print and Visual Advertising, Linux Programming & Shell Scripting
- **Activities:** BITS-ACM, Sally Robotics (Self Driving Car Research), Conquest (Startup Accelerator), Center for Entrepreneurial Leadership (CEL), Department of External Affairs (DEA), NSS - Computer Literacy Program

Internships

1. Samsung Research, Bangalore

May 2018 – July 2018 | Mentor: [Dr. Pinaki Bhaskar](#)

- Applied Deep Learning in Computer Vision and Natural Language Processing to analyze user behaviour
- Built head pose detection and nod detection models
- Used Facebook's Inference to get sentence embeddings and detect Self Disclosure
- Used these features to improve "Intimacy" between the Human and Robot

2. CSIR - Central Electronics Engineering Research Institute, Chennai

May 2017 – July 2017 | Mentor: [Dr. Bala Pesala](#)

- Worked on detecting fatigue in car drivers using non-invasive methods
- Designed and developed a blood pulse monitoring wearable device using Bluno Beetle and PPG sensors
- Developed an Android app with a for real-time communication with the wearable device
- Implemented a multi-threaded architecture for high speed data transfer between the Android App and the wearable device

Research Experience

1. Spoof Detection, CEERI Pilani

May 2018 – Present | Mentor: [Prof. Santanu Chaudhury](#), Schlumberger Chair Prof. at IIT Delhi & Director at CSIR-CEERI

- Studying face detection and liveness analysis methods such as oculesics
- Implemented Face Detection using Haar Cascades in Python with OpenCV
- Trained CNN for liveness detection using gaze and nod

2. Deep Learning for Brain Computer Interfaces, BITS Pilani

Jan 2018 – May 2018 | Mentor: [Prof. Vandana Agarwal](#), Asst. Prof. at BITS Pilani

- Explored the [EEG Confusion Dataset](#) to identify learner's confusion in MOOC videos using Deep Learning
- Compared various classification methods such as like SVM, K-Nearest Neighbor, Gaussian Naive Bayes
- Built an end-to-end Deep Learning pipeline using features from Band Power Estimation and LSTM, and trained a model that achieves much higher accuracy than those achieved previously on the dataset

3. Threat Detection in Baggages using X-Ray Images, CEERI Pilani

Aug 2017 – Dec 2017 | Mentor: [Dr. Dhiraj Sangwan](#), Scientist at CEERI Pilani

- Primary study on detection of harmful objects (such as knives, bombs etc.) from X-Ray images of baggages
- Implemented a bag-of-words model with sparse KNN classification
- Trained and achieved better detection accuracy with CNN (Alexnet)

4. Research Assistant, Advanced Data Analytics and Parallel Technologies lab, BITS Pilani

Aug 2017 – Dec 2017 | Mentor: [Prof. Navneet Goel](#), Prof. at BITS Pilani

- Studied Concurrent and Distributed Data Structures
- Parallelized algorithms using MPI and OpenMP in C++

Projects in Machine Learning / AI

1. Text Guided Attention Model for Image Captioning

Apr 2018

- Implemented [the paper by Mun et. al.](#) as a proof of concept
- Used CIDER score to extract guidance captions to train the Attention Model on the MS-COCO 2014 dataset

- Built the decoder LSTM model to generate captions

2. Probabilistic Inference using Bayesian Networks

Sep 2017 – Dec 2017

- Modeled a real world scenario as a bayesian network to answer queries regarding various events (health problems, accidents etc.) and their factors (air pollution, bad road conditions etc.)
- Used markov blanket of each Random Variable to reduce the number of computations needed to answer the probability query

3. Connect 3 game playing bot

Sep 2017

- Implemented a 2 player Connect-3 game using minimax algorithm
- Obtained a 14 times speedup using alpha-beta pruning during the search

4. Improving Sales of a Late Night Restaurant using Data Mining Techniques

Oct 2017

- Used Association Rule Mining to find patterns in the sales of the All Night Canteen (ANC) of BITS Pilani
- Proposed a dynamic pricing scheme to adjust the price of an item based on the hour of the day and the customer type. Obtained a 5% rise in profits while keeping a low penalty.
- Suggested combo offers of low rated items with higher rated items to increase the sales of the low rated items

5. Visualizing Perceptron Learning

Oct 2017

- Implemented a visualization tool for visualizing the learning process of a perceptron in a 2 dimensional input space
- Used Python's TKinter graphics for displaying the curve learnt along with positively and negatively classified samples

6. Logic Programming

Nov 2016

- Used prolog as a predicate logic system to implement a mathematical expression reducer
- Implemented a Knowledge-base query-answering system, to answer questions about the Academic Regulations of BITS Pilani

Writing

1. A New Kind of Interpretation – Storing Knowledge in Everyday Objects | [Post](#)

2. Paper Reviews / Observations / Presentations

- M. A. Shepherd et. al., *A fixed size Bloom Filter for Searching Textual Documents* | [Review](#)
- B.K. Tripathi, *On the complex domain deep machine learning for face recognition* | [Review](#)
- Presented some technical analysis on a few papers which can be [found here](#)

Other Recent Projects

1. Tiny: An inline Turing Machine Simulator for C++ Language

- Introduced a novel concept of a simple C library that has routines to simulate a turing machine.
- Improved the library using single letter macros that can be placed inline in a C / C++ program

2. Data Structures

- Implemented common Data Structures using templates in C++ for generic code reusability
- Useful for rapid code implementation with just a single header file dependency

3. Simple-DB

- A simple JSON-like data storage, retrieval, and presentation API for python
- Useful for viewing JSON files in python with custom formatting

4. Spin-UI

- A neat, embed-able, light-weight text editor template written in HTML/CSS

Positions Held

1. Senior Core Member, [Sally Robotics](#)

Jul 2018 – Present

- Sally Robotics is a Self-Driving Car Research Group at Center for Robotics and Intelligent Systems, BITS Pilani
- Research: Achieving Complete Autonomous capabilities using Deep Learning and AI

2. Design Chair, [ACM BITS Pilani](#)

Mar 2017 – Mar 2018

- ACM BITS Pilani won best student chapter awards by ACM India for the last 3 years
- Lead the design team for building the front end for Checkmate 2017 - an interactive quizzing

3. Chief Design Officer, [Conquest 2017](#)

Aug 2016 – Aug 2017

- Conquest is India's first student run start-up launchpad, organized by Center for Entrepreneurial Leadership (CEL)
- Designed the branding for Conquest and CEL & for was responsible for effective online campaigns to increase outreach

Associations

1. Core Team Member, [Center for Entrepreneurial Leadership \(CEL\)](#)

Feb 2016 – Present

2. Core Team Member, [ACM BITS Pilani](#)

Feb 2016 – Present

3. Core Team Member, [Aarohan](#) 2016

Aug 2015 – Aug 2016

4. Teaching Volunteer, [National Service Scheme - CLP](#)

Aug 2015 – Dec 2015

5. Member, Model United Nations, [Mount Carmel School](#)

2013 – 2014

6. Co-Founder & Programming Head, Softsol - the Computer Club, [Mount Carmel School](#)

2013 – 2014

Software Skills

1. **Strong in** Python, C, C++, **Familiar with** Java, Bash, Prolog, x86, Scheme, Assembly

2. **Platforms:** Linux (Ubuntu, Fedora), Windows 10

3. **Libraries & Packages:** C++ STL, Keras, Tensorflow, Numpy, Matplotlib, OpenCV, Scipy

4. **Software Tools:** IBM SPSS Modeler, Weka, AutoCAD, Adobe Photoshop, Adobe Illustrator

Awards & Achievements

1. Reward Medal, [FIITJEE Ltd.](#)

2016 | For securing rank 2420 (top 1.6%) in over 1.5 Lakh candidates in JEE Advanced 2015

2. Certificate of Completion, [Microsoft Academia Accelerator](#)

2016 | Code.Fun.Do hackathon

3. All India Rank 2420, [JEE \(Advanced\)](#)

2015 | Among 1.5 lakh candidates qualified

3. Award for Academic Excellence, [Mount Carmel School](#)

2014 | Award for having the highest score in Physics, Grade 12, CBSE Board Exams

4. Certificate of Appreciation, [Mount Carmel School](#)

2014 | For my dedication & contribution to the Computer Club

4. Certificate of Achievement, [Faith Academy](#)

2013 | Presented a short talk on "Fractals" that received the first prize

5. 99.475 percentile, Qualitative Reasoning, [CBSE](#)

2013 | in Problem Solving Assessment, a nationwide exam conducted by CBSE for grade 11 (1.3M students)

6. Runner Up, Dynamix - Programming, [Ramjas Foundation](#)

2012 | Runner up in a competition on Competitive Programming in C++

7. Gold Medal, [International Olympiad of English language](#)

2012 | Class Rank 1, State Rank 17

8. Keshav Pande Memorial Award, [Mount Carmel School](#)

2012 | For GPA of 10 in English and Hindi Languages

9. Certificate of Excellence, [Oracle ThinkQuest](#)

2012 | For "creating an outstanding entry that finished in the top 10%"

10. First Position, [Directorate of Education G.N.C.T Delhi](#)

2012 | In Zonal Music Competition in the Folk & Patriotic song categories

11. Certificate of Merit, [Mount Carmel School](#)

2012 | For GPA of 9.8 in grade 10

12. Third Position, [Green Fields School](#)

2011 | Weave a Web – Web Development interschool Competition

13. First Position, [Directorate of Education G.N.C.T Delhi](#)

2010 | In Zonal Music Competition – Folk Song

14. First Position, [Directorate of Education G.N.C.T Delhi](#)

2009 | In Zonal Music Competition in the Folk song category