

# SHREESHA N MURTHY

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[www.linkedin.com/in/shreesha-n](https://www.linkedin.com/in/shreesha-n) | Portfolio: <https://shreeshan.github.io> | [www.github.com/ShreeshaN](https://www.github.com/ShreeshaN)

## EDUCATION

**Master of Science in Data Science** | August 2019 – May 2021, Worcester Polytechnic Institute (GPA: 4.0)

**Bachelor of Engineering in Computer Science** | May 2011 – May 2015, VT University (GPA: 3.6)

## RELEVANT COURSEWORK

Machine Learning, Deep Learning, Reinforcement Learning, Statistics, Big Data Analytics, Data Structures

## WORK EXPERIENCE

**Junior Software Engineer** – Razorthink Technologies, India | July 2015 – Dec 2015

**Artificial Intelligence Engineer** – Razorthink Technologies, India | Jan 2016 – July 2019

**Graduate Research Assistant** – Worcester Polytechnic Institute, MA, USA | Jan 2020 – Till date

## SKILLS

- **Languages:** Java, Python, C++, HTML, Javascript, Scala, R
- **Frameworks and Libraries:** TensorFlow, Pytorch, spaCy, Gensim, NLTK, OpenCV, Opensmile, Kaldi, Flask
- **Big data:** Hadoop, Spark, Tensorflow PS architecture, Horovod(distributed deep learning), Kafka
- **Databases:** MySQL(proficient), MongoDB(intermediate), Cassandra (basic)

## PUBLICATIONS

S. N. Murthy, F. Asani, S. Srikanthan, E. Agu, *DeepSEAS: Smartphone-based Early Ailment Sensing using Coupled LSTM Autoencoders*, IEEE BigData 2020 (Accepted) | [Slides](#)

## RESEARCH PROJECTS

- **P. Parvatharaju, S. Murthy, Differential Learning using Neural Network Pruning** – [Github](#) | [Slides](#) | arXiv 2021<sup>(1)</sup>
  - Devised on a novel technique to prune nodes of an FFN\* using weighted learnable short circuit connections, which are pruned off of the network based on a threshold.
  - The goal was to retain only crucial connections in the network.
  - Gained 85% accuracy on Fashion-MNIST in 1400 training iterations compared to 7000 training iterations using a plain FFN\*.
- **Alcohol Intoxication sensing using Human voice** – [Github](#) | arXiv 2021<sup>(1)</sup>
  - Built multiple Deep learning models to detect alcohol intoxication in the Human voice.
  - Used time-warping, frequency masking & time masking to augment positive class samples.
  - Employed custom loss function to force Autoencoders to learn prominent lower-dimensional features.
  - Played around with multiple data representations – MFCC, FBanks, GFCC, and Gramian Angular Fields

## PROFESSIONAL PROJECTS

- **Explainable AI (Deep Learning) - Designed a novel method to explain the predictions of an FFN\***
  - Trained an FFN with an extra layer right before the first layer and the input layer, The extra layer connects with the first layer in a 1-to-1 fashion (instead of a full connection).
  - Used Gradient Descent and Back Propagation to update weights of this extra layer.
  - Combined the trained weights with raw customer data to report explanations for the prediction.
  - Lessened the operations costs and cut man-hours of our client, a major Banking firm by 80%.
- **End to End Trainable OCR (Deep Learning) – Computer Vision**
  - Headed a team that developed an end-to-end trainable OCR.
  - Trained a Convolutional LSTM on a multi GPU distributed pipeline(Data parallelism).
  - The dataset contained 50 types of font - 10 million word images. Prediction across 104 unique characters. Saved \$10k annually for our Banking client. Accuracy-81%.
  - Technologies used: Python|Tensorflow|GCP|Flask|spaCy.
- **Conversational AI (Deep Learning) – Natural Language Processing**
  - Implemented a chatbot for end-users to query their relational database in English.
  - The chatbot converts questions that are in English into MySQL syntax and queries the database.
  - Finetuned word2vec models to tweak and personalize the results for domain-specific needs, saving \$25k annually for a fortune 500 financial services company

## VIDEO PRESENTATIONS – [HOROVID](#) | [ANOVA](#)

\* FFN – Feed forward Neural Network | 1 – Publishing to arXiv in 2021 for moderator comments.