Suhas Bettapalli Nagaraj

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Summary

• I am a graduate student at Penn State. I have been fortunate to work in diverse fields such as wireless sensor networks to prevent train derailments & audio processing to identify neurological disorders.

• Previously, I have had opportunities to work in teams and on individual projects both in specialized and interdisciplinary domains. I enjoy being a part of cross-functional, high-impact projects!

• Possessing a background both in research and in developing customer-centric products, my goal is now to work full-time on Program/Product based roles starting **Mid-2021**. This, to me, is the best way to positively contribute to the growth of the company and touch the lives of millions.

Education

The Pennsylvania State University, University Park, PA *Aug 2019 - May 2021 (expected)*
MS in Electrical Engineering specializing in Signal & Image Processing

PES University, Bangalore, India *Aug 2014 - May 2018*
B.Tech in Electronics & Communication Engineering specializing in Signal Processing

Work Experience

3M Health Information Systems, Pittsburgh/Remote *May 2020 - Aug 2020*
Speech Recognition Research Intern *Core Speech R&D Team*

- • Implemented speaker separation methods for improving physician-patient conversations.
- • Engineered methods for improving performance on reverberated audio samples.
- • Collaborated in a cross-functional team to deliver a new product for the 3M HIS group.

Penn State University, University Park *Spring and Fall 2020*
Instructional Assistant *College of Informational Sciences & Technology*

- • Assistant for DS 310 (Machine learning for Data Analytics) under Dr. Fenglong Ma.
- • Conducted lab sessions, Handled student clarifications, Graded exams and took care of the overall functioning of the class.

Indian Institute of Science, Bangalore *May 2018 - Aug 2019*
Project Assistant *SPIRE Lab, Electrical Engineering Department*

- • End to end project ownership. • Collected and analyzed speech signals of patients to classify ALS & Parkinson's subjects from healthy controls. Paper presented at INTERSPEECH 2019, Austria.

• Defined the **product vision**, interacted with the stakeholders (500+ patients, 30+ neurologists), **established a roadmap** for the project and responsible for the product implementation.

• Developed a smartphone app that is currently being used by neurologists for real time detection of ALS & Parkinson's disease. Works with an accuracy of 99.9%.

• Responsible for maintaining speech data corpus and SPIRE Lab alumni relations for the year 2018-19.

Skills

Languages	MATLAB, Python, C, C++, Bash, SQL
Software & Tools	Keras, Tensorflow, PyTorch, Numpy, SciPy, Matplotlib, spaCy, CVXPY OpenCV, Scikit-learn, Pandas, LaTeX, Arduino, Git, SoX, FFmpeg, Kaldi

Coursework

Graduate	Neural Networks, Graphs & Algorithms, Emerging Topics in Networking, Probability, Random Variables & Stochastic Processes, Convex Optimization, Wavelets & Sparse Signal Processing, Digital Image Processing II
Undergraduate	Linear Algebra, Digital Signal Processing, Computer Vision, Fuzzy Systems, Pattern Recognition & Classification, Research Methodology
Other	**Lean Six Sigma Yellow Belt certification** - Council for Six Sigma Certification (CSSC)

Publications

1. **Suhas, BN**, Bhagavat, S., Vimalanand, V. & Suresh, P. (2018, July). Wireless Sensor Networks Based Monitoring of Railway Tracks. **In 2018 International CET Conference on Control, Communication, and Computing (IC4) (pp. 187-192). IEEE**. (DOI: 10.1109/CETIC4.2018.8531029)
2. **Suhas, BN**, Patel, D., Rao, N., Belur, Y., Reddy, P., Atchayaram, N.,Yadav, R., Gope, D., & Ghosh, P. K. (2019). Comparison of Speech Tasks and Recording Devices for Voice Based Automatic Classification of Healthy Subjects and Patients with Amyotrophic Lateral Sclerosis. **Proc. INTERSPEECH 2019, 4564-4568**. (DOI:10.21437/Interspeech.2019-1285)
3. Mallela, J., Illa, A., **Suhas, BN**, Udupa, S., Belur,Y., Atchayaram, N., Yadav, R., Reddy, P., Gope, D., Ghosh, PK, "Voice based classification of patients with amyotropic lateral sclerosis, parkinson's disease and healthy controls with CNN-LSTM using transfer learning," **In Proc. IEEE International Conference on In Acoustics, Speech and Signal Processing (ICASSP), May 2020, (pp. 6784-6788)**. (DOI:10.1109/ICASSP40776.2020.9053682)
4. **Suhas, BN**, Mallela, J., Illa, A., Belur,Y., Atchayaram, N., Yadav, R., Reddy, P., Gope, D., Ghosh, PK, "Speech task based automatic classification of ALS and Parkinson's Disease and their severity using log Mel spectrograms" (Conference Copy)

Lab Talks/Presentations

Introduction to Music Information Retrieval, Audio licensing & Blockchains — *Nov 2018*
Electrical Engineering Department, Indian Institute of Science

Performance characterization of Sound Recorders — *Jul 2019*
Electrical Engineering Department, Indian Institute of Science

MIMO in 5G Wireless Systems — *Dec 2019*
School of EECS, Penn State University

OTHER

Co-curricular
- **Executive Board Member**, Engineering Graduate Student Council (EGSC)
- **EGT Chair-elect**, EGSC, Penn State (2020-21)
- **SEDTAPP Departmental Representative**, Penn State (2020-21)

Extra Curricular • Playing Indian Percussions • Speedcubing • Quizzing • Chess • Yoga

References

1. Dr. Prasanta Kumar Ghosh, Indian Institute of Science, India
2. Dr. Fenglong Ma, Penn State, PA
3. Dr. Mark C. Fuhs, 3M Health Information Systems, PA
4. Gp Capt. (Retd.) Suresh Padmanabhan, Collins Aerospace, India