

Deep Patel

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Education

- Aug. 2018 **M.Tech(Res)**, Indian Institute of Science (IISc), Bangalore, CGPA: 7.7/10.
–Present *Department of Electrical Engineering*
Thesis' Topic: I am studying and designing algorithms for robust supervised learning under label noise
Advisor: Prof. P.S. Sastry
- July 2012 **Bachelor of Technology**, PDPU, Gandhinagar, CGPA: 8.29/10.
–July 2016 *Department of Electrical Engineering*

Work Experience

- Sept. 2017 **Project Assistant**, EE Department, IISc, Bangalore.
–July 2018 *Advisor: Dr. Prasanta Kumar Ghosh*
Funding Agencies: DST India & Pratiksha Trust
- Aug. 2016 **Graduate Engineer Trainee**, Reliance Industries Ltd. (RIL), Jamnagar, Gujarat.
–Sept. 2017 - Observation of electrical commissioning and maintenance activities at a Low Density Polyethylene Manufacturing (LDPE) Plant, RIL J3 Project

Teaching Experience

- Sept. 2020 **Teaching Assistant**, EE Department, IISc, Bangalore.
–Jan. 2021 *Course: Stochastic Models and Applications*
- Jan. 2020 **Teaching Assistant**, EE Department, IISc, Bangalore.
–June 2020 *Course: Pattern Recognition and Neural Networks (PRNN)*

Publications (Related to Thesis)

- Dec. 2020 **Patel, D.** et al., 'Memorization in Deep Neural Networks: Does the Loss Function Matter?' [under review]

Other Publications

- Interspeech 2019 B. N., Suhas, **Patel, D.**, et al., 'Comparison of Speech Tasks and Recording Devices for Voice Based Automatic Classification of Healthy Subjects and Patients with Amyotrophic Lateral Sclerosis' [[link](#)]

ICASSP 2018 Illa, Aravind, **Patel, D**, et al., 'Comparison of speech tasks for automatic classification of patients with amyotrophic lateral sclerosis and healthy subjects' [[link](#)]

Research Experience

Aug. 2019 **Robust Supervised Learning under Label Noise**, *Masters Thesis*, IISc, Bangalore.

–Present Advisor: Dr. P S Sastry

- Investigated the role of loss functions in reducing the degree of 'memorization' in neural networks for better generalization under label noise.
- Devising a novel sample reweighting scheme that relies on mini-batch statistics alone for robustness to label noise. These statistics capture the learning dynamics to control the degree of memorization for better generalization even under label noise.

Sept. 2017 **Disease Onset & Severity Prediction for ALS**, *EE Department*, IISc, Bangalore.

–July 2018 Advisor: Dr. Prasanta Kumar Ghosh

- Design and creation of a dataset comprising of speech samples from patients with ALS and Parkinson's Disease
- Investigated utility of a variety of speech tasks along with corresponding articulatory data for automated disease onset and severity prediction of two neurological disorders: ALS and Parkinson's Disease
- This work has led to two publications – [ICASSP 2018](#) and [Interspeech 2019](#)

Recent Projects

March 2019 **Sparse Signal Estimation by Maximally Sparse Convex Optimization.**

–April 2019 Course: Compressive Sensing & Sparse Signal Processing .

- For the problem of denoising, a convex optimization problem was solved which induces strong sparsity (than ℓ_1 -norm) with the help of proposed parametric, non-convex penalty functions
- Performance comparison was done with classical algorithms such as *Matching Pursuit*, *Basis Pursuit*, and *Hard Thresholding* methods. [code]

Extracurricular Activities

June 2020 **Team Member**, *EMPATHS*, IISc, Bangalore.

- Present
- Helped organize and moderate events related to mental health awareness and sensitization for the campus community

June 2019 **Team Member**, *NoteBook Drive (NBD)*, IISc, Bangalore.

- Present
- Helped organize annual events such as *Children's Day Celebration*, *Note Book Distribution*, and *Scholarship Distribution* which are carried out across 25 government schools in and around Bangalore (~ 4000 students).
 - Helped organize a weekly programme, *Science Mentorship*, wherein government school kids get to study science and maths via interactive experiments and inculcate scientific temperament

Relevant Courses

- Stochastic Modelling & Applications
- Linear & Non-Linear Optimization
- Compressive Sensing & Sparse Signal Processing
- Analysis-I
- Machine Learning
- Convex Optimization

Academic Achievements & Honours

- 2018 – 2020 Ministry of Human Resources Development (MHRD), Government of India, Scholarship Holder
- 2016 AIR 921 in Graduate Aptitude Test in Engineering (GATE)
- 2016 Silver Medal (University rank 2 out of 60 students) for academic performance in undergraduate program

Programming Skills

Languages Python

Software & Tools \LaTeX , MATLAB, TensorFlow, PyTorch

Languages

- English
- Gujarati
- Hindi
- Kannada (Ongoing effort)

References

IISc, Bangalore **Dr. P.S. Sastry.**
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IISc, Bangalore **Dr. Prasanta Kumar Ghosh.**
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