Paarth Neekhara

Education

2019-Present **PhD in Computer Science**, *University Of California San Diego*, .

2017–2019 **Masters in Computer Science**, *University Of California San Diego*, *CGPA 3.9*.

2013–2017 **BTech in Computer Science**, *Indian Institute of Technology, Roorkee*, *CGPA 8.6 (scale of 10)*.

Experience

Oct 2017-Present **Teaching Assistant**, UCSD.
Teaching Assistant for graduate and undergraduate machine learning courses including CSE-253: Neural Networks for Pattern Recognition (Graduate), MUS-206 Deep and Shallow Learning for Music generation, CSE-190 Neural Networks.

June 2018-Aug 2018 **Research Assistant**, *Profesor Shlomo Dubnov*, UCSD.
Summer Research Assistant for Professor Shlomo Dubnov. Worked on a project on Adversarial Reprogramming of Sequence Classification Neural Networks. Pre-print : https://arxiv.org/abs/1809.01829

May–July 2016 **Software Engineer**, *Microsoft*, Hyderabad, India.
Worked with the Bing STCI Team and wrote a pipeline to extract Event related data from the distributed cloud database of Microsoft - COSMOS.

May-2015 - Aug-2015 **Software Engineer**, *Blue Water Trade Winds*, Dehradun, India.
Worked with a small team of software engineers to design and implement a web-based software service to plan an optimum route and speed schedule for a voyage. http://bwesglobal.com/boss.html

Machine Learning Papers

May 2019 **Universal Adversarial Perturbation for Speech Recognition Systems**, *To be presented at Interspeech 2019*,
Paarth Neekhara*, Shehzeen Hussain*, Prakhar Pandey, Shlomo Dubnov, Julian McAuley, Farinaz Koushanfar.
Proposed a method to compute a single audio agnostic perturbation which when added to an input audio will most likely cause mis-transcription by a victim Speech Recognition Model.

May 2019 **Expediting TTS Synthesis with Adversarial Vocoding**, *To be presented at Interspeech 2019*,
Paarth Neekhara*, Chris Donahue*, Miller Puckette, Shlomo Dubnov, Julian McAuley.
Improving magnitude estimation from mel-spectrogram using GANs for vocoding into speech.

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August-October 2018 **Adversarial Reprogramming of Sequence Classification Neural Networks**, *https://arxiv.org/abs/1809.01829*,
Paarth Neekhara, Shehzeen Hussain, Shlomo Dubnov, Farinaz Koushanfar.
Proposed a method to adversarially repurpose text classification neural networks for alternate tasks. Accepted at AAAI 2019 Workshop on Engineering Dependable and Secure Machine Learning Systems.

Oct–Dec 2016 **Unsupervised Image to Image Translation**, *https://arxiv.org/abs/1701.02676*,
Hao Dong, **Paarth Neekhara**, Chao Wu, Yike Guo.
Worked remotely with PhD students from Imperial College London, on the task of domain translation using an Auxiliary GAN. A trained generator network was inverted to project back to latent space and cross-conditioned to synthesize corresponding image in a different domain. Arxiv pre-print currently has 28 citations.

Open Source Machine Learning Projects

Nov 2017 **Convolutional–VQA**, *https://github.com/paarthneekhara/convolutional-vqa*.
Used a dilated convolutional model for sequence modelling for the task of Visual Question Answering using attention over Visual Features

Dec 2016 **ByteNet**, *https://www.github.com/paarthneekhara/byteNet-tensorflow*.
Implemented the bytenet model of dilated convolutions for sequence to sequence translation from the DeepMind's paper "Neural Machine Translation in Linear Time" .

Aug 2016 **Text To Image Synthesis**, *https://www.github.com/paarthneekhara/text-to-image*.
Developed a tensorflow implementation of synthesizing images from text by conditioning a generative adversarial network with skip thought vectors. Used the GAN-CLS algorithm from the paper "Generative Adversarial Text-to-Image Synthesis" and conditioned it with uni-skip vectors.

Software Engineering Projects

May-2015 - Present **BOSS**, *http://bwesglobal.com/boss.html*.
Led the development of a Weather Routing and Fuel Optimization marine service. Designed pipelines for training and validating machine learning models for modeling ship responses to weather. Designed and implemented a dynamic programming algorithm for finding the most optimum route and speed schedule of a voyage in forecast weather conditions.

Dec 2016 **ETherm**, *https://bwesglobal.com/chm.html*.
Worked on the development of a temperature drop simulation tool for ships carrying heated cargo. Etherm is a module in the Cargo Heating Management (CHM) software service. CHM prepares heating plans for optimizing cargo heating fuel consumption on ships.

Relevant Courses

Graduate CSE-250A Probabilistic Graphical Models, CSE-293 Convex Optimization, CSE-250B Machine Learning Statistical Approach

Online Stanford CS-231n, Stanford CS-224d

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Extra-curricular Activities

Photography	Won Best Photo award in Wildlife and Landscape categories at an annual photography exhibition in IIT Roorkee.
Organization	Mentorship of undergraduate students at IIT, Roorkee in the Student Mentorship Program.
Hobbies	Hiking, Swimming, Cycling, Running, Surfing

Achievements

- National Runners Up, Microsoft Hackathon: Code Fun Do, India - 2016
- University Runners Up, Microsoft Hackathon: Code Fun Do, IIT Roorkee - 2015
- Gold Medalist, DPS RK Puram, For excellence in Academic Performance

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