

Paarth Neekhara

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Education

- 2019-Present **PhD in Computer Science**, University Of California San Diego.
Advised by Prof. Julian McAuley and Prof. Shlomo Dubnov
- 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

- Jan 2019 - Present **Lab Member**, *Prof. Julian McAuley, UCSD*.
Working on machine learning security, machine learning for audio and natural language processing systems .
- Jun 2020 - Sept 2020 **Research Intern**, *Facebook Inc, Seattle (Remote)*.
Interned with the AI Red team to evaluate vulnerabilities of DeepFake detectors from the DFDC challenge and models in production.
- Oct 2017- March 2019 **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.
- Jun 2018- Aug 2018 **Research Assistant**, *Professor Shlomo Dubnov, UCSD*.
Summer Research Assistant for Professor Shlomo Dubnov. Worked on Adversarial Reprogramming of Sequence Classification Neural Networks.
- May–Jul 2016 **Software Engineering Intern**, *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 - Present **Software Architect**, *Blue Water Trade Winds, Dehradun, India*.
Software architect for BOSS: A web based platform for voyage optimization, fleet management and vessel performance analysis for shipping companies and oil majors. <https://bwesglobal.com/>

Publications

- [6] **Adversarial DeepFakes: Evaluating Vulnerability of Deepfake Detectors to Adversarial Examples**, *WACV 2021*,
Shehzeen Hussain*, **Paarth Neekhara***, Malhar Jere, Farinaz Koushanfar, Julian McAuley.
Craft adversarial DeepFake videos that can bypass state of the art DeepFake detectors.
- [5] **Adversarial Reprogramming of Text Classification Neural Networks**, *EMNLP 2019*,
Paarth Neekhara, Shehzeen Hussain, Shlomo Dubnov, Farinaz Koushanfar.
Adversarially repurpose text classification neural networks for alternate tasks.
- [4] **Universal Adversarial Perturbations for Speech Recognition Systems**, *Interspeech 2019*,
Paarth Neekhara*, Shehzeen Hussain*, Prakhar Pandey, Shlomo Dubnov, Julian McAuley, Farinaz Koushanfar.
Find a single audio agnostic perturbation which when added to an input audio will most likely cause mis-transcription by a victim Speech Recognition Model.
- [3] **Expediting TTS Synthesis with Adversarial Vocoding**, *Interspeech 2019*
Paarth Neekhara*, Chris Donahue*, Miller Puckette, Shlomo Dubnov, Julian McAuley.
Vocoding mel-spectrograms to audio using GANs for magnitude estimation.

- [2] **FastWave: Accelerating Autoregressive Convolutional Neural Networks on FPGA**, ICCAD 2019
Shehzeen Hussain, Mojan Javaheripi, **Paarth Neekhara**, Ryan Kastner, Farinaz Koushanfar.
Accelerating inference of WaveNet based neural networks on FPGA.
- [1] **Unsupervised Image to Image Translation**, Preprint - <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.

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**, <https://bwesglobal.com/services/boss/>.
A web based platform for voyage optimization, fleet management and vessel performance analysis for shipping companies and oil majors. Worked on full stack development and high level designing of the application.
- Dec-2015 - Present **Cargo Heating Management**, <https://bwesglobal.com/services/chm/>.
Led the development of the software based solution for planning and monitoring cargo heating operations on ships to optimize fuel consumption.

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

Extra-curricular Activities

- Photography Won Best Photo awards 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

- Honorable Mention for the Masters Research Award, UC San Diego, 2019
- 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