Rashmi Milind Phadnis

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EDUCATION

University of Pennsylvania (UPenn) | M.S. (Electrical and Systems Engineering) *Fall 2021 - Spring 2023*

- Coursework: Principles of Deep Learning, HW/SW Co-design for ML, Learning in Robotics, Advanced Computer Vision, Graph Neural Networks, Machine Perception, Modern Convex Optimisation, Engineering Economics
- Teaching Assistant: CIS 521 Artificial Intelligence, CIS 581 Computer Vision & Computational Photography

University of Mumbai | **Bachelor of Engineering (Electronics and Telecommunications)** *Aug 2016 - May 2020*

EXPERIENCE

UPenn: Research Engineer | PI: Dr. Lyle Ungar *June 2023 - Present*

- Leading a team of 2 as a deep learning researcher under Dr. Lyle Ungar and Daniel Kahneman, responsible for deciding research direction, building and training models, managing data pipelines, evaluating performance of models
- Current project is focused on building models of mental representations with respect to person and face perception

Samsung Research America: Deep Learning Research Scientist Intern *May 2022 - Aug 2022*

- Research and implementation of conditional GANs, image-to-image translation networks, VAEs, other variants of generative modelling and neural rendering techniques like Deferred Neural Rendering, NeRFs
- Manage data pipelines (image, video, 3D data), train/deploy ML models, evaluation, debugging, optimization, tune hyperparameters for the development of real-time photo-realistic rendering of virtual avatars/virtual humans

UPenn: Graduate Research Assistant, GRASP Lab *Feb 2022 - May 2022*

- Contributed to the Lifelong ML group's 'Novelty Detection & Adaptation for Deep Neural Networks' project centred on predicting the next state of a given scene by trying to model the physics of the world and using it as a prior
- Implemented concepts from research papers such as ViTs, RNNs with modifications and improvements, focused on Perception & Reinforcement Learning in Robotics

Quantiphi, Inc.: Analyst *Nov 2020 - June 2021*

- Collaborated with Google's GCP team along with various clients' leadership team to design innovative, cutting-edge ML/AI solutions for a wide range of use-cases
- Catered to clients specifically in the healthcare ecosystem in New York

PROJECTS

Efficient Panoptic Segmentation with SOLOv2 [Code] [Project Report] *Aug 2022 - Dec 2022*

- Developed a streamlined version of the state-of-the-art architecture EfficientPS for Panoptic Segmentation on urban scene understanding
- Enhanced the architecture's performance by integrating the highly effective SOLOv2 as the instance segmentation head instead of a Mask-RCNN

Image Super-Resolution Using GANs [Code] [Project Report] *Aug 2021 - Dec 2021*

- Improved the perceptual quality of the ESRGAN network for super-resolution by incorporating the Multi-Scale Discriminative Feature loss, enhancing the upsampling method using PixelShuffle and changing the generator, discriminator architecture
- Stabilised ESRGAN's training by incorporating spectral normalisation, weight norm, avoiding sparse gradients

Accelerating VGG16 DCNN With An FPGA [Code] [Project Report] *Aug 2021 - Dec 2021*

- Modified the VGG process flow to use a custom convolution layer implemented on the AWS F1 FPGA in C++ OpenCL host code which is integrated into PyTorch using the C++ extension
- Optimised the design space using loop unrolling, block matrix multiplication on a systolic array, multiple compute units

SKILLS AND COURSES

- **Programming Language and Libraries:** Python, C++, OpenCV, PyTorch, TensorFlow, scikit-learn, MySQL, Git, MATLAB
- **Certified Courses:** Deep Learning Specialization (deeplearning.ai), Deep Learning (NPTEL), Control of Mobile Robots (GeorgiaTech), IoT (Reliance Unlimit)
- **Skills:** ML, Deep Learning, Computer Vision, OpenCL, CUDA, Docker, Blender, AWS

PAPER PUBLICATIONS

- 'Real-Time Vein Detection and Mapping using Near-Infrared Lights' (IEEE INDICON, IEEE Xplore) *Dec 2021*
- 'Portable Gas Detection and Warning System for Olfactory Disabled' (IEEE INCET, IEEE Xplore) *Jun 2020*
- 'Real-Time Asset Tracking using BLE Beacons' (Global Conference for Advancement in Tech, IEEE Xplore) *Oct 2019*