Sweta Priyadarshi

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EDUCATION

Carnegie Mellon University | Dec 2020
Masters of Science, Electrical & Computer engineering: *GPA 3.89/4.0* | Pittsburgh, PA
Graduate Coursework: 11785 Deep Learning|18661 Introduction to Machine Learning | 18847F Cloud and ML infrastructure | 16720 Computer Vision | 10605 Machine Learning for Large Dataset | 18898 Geometric Deep Learning | 11777 Multimodal Machine Learning | 18781 Speech Recognition and Understanding
Teaching Assistant: 18793 Image and video processing; **Independent Coursework**: Data Structure & Algorithm

Manipal Institute of Technology | May 2018
Bachelor of Technology, Electrical and Electronics Engineering **Minor:** Business Management: *GPA 9.14/10.0* | Manipal, India

SKILLS

Programming languages & Tools: Python, C++, MATLAB, PyTorch, TensorFlow, Keras, OpenCV, PySpark, Mlib, AWS, Numpy, Pandas, Scikit
Expertise: CNN, RNN, LSTM, Faster-RCNN, GAN, Apex Amp, Apex Distributed, Beam Search, CTC Decoder, Decision Tree, PCA, t-SNE, Graphical Models

PROFESSIONAL EXPERIENCE

Deka R&D | Machine Learning Software Engineer | Manchester, NH, Feb 2021- Present
- Development & deployment of 3D-OD perception model for dynamic object velocity estimation, to be deployed on FedEx delivery bot.

Nvidia | Deep Learning Intern | Santa Clara, CA, May 2020-Aug 2020
- Implemented End-to-End Multi-Task Attention network for NYUv2 dataset- 3 task: Semantic, depth and surface normal prediction
- Developed baseline for segmentation, depth, edge & keypoint detection, surface normal prediction using shared backbone for Taskonomy (5 Task) & NYUVv2 (3 Task)
- Implemented and obtained novel algorithm for task loss balancing for Multi-tasking networks among tasks for scene understanding on NYUv2 and Taskonomy dataset, considering positive and negative knowledge transfer among tasks. Implemented branching methods to balance different tasks in multi-task networks
- Utilized Apex-distributed for model training on 8 GPUs with mixed precision of FP16. Hyperparameter optimization: Ray Tune PBT, LARS, NovoGrad implementation

Amazon | Operations Engineer | Bangalore, India, April 2018-Sept 2018
- Designed Lighting automation & sorting system Automator deployment plan; Reducing the consumption of lighting in Indian warehouses by 43%

RESEARCHEXPERIENCE
LinkedIn:www.linkedin.com/in/swetap24

Graduate Research Assistant| Walmart & BossoNova Project| Biometrics Center, Cylab| Prof. Marios S. | CMU, PA, Sept 2019-Ongoing
Developing plug detection using product code identification and object identification
- Deployed Dilated Resnet-50 and EfficientNetB4 with cutout, cutmix, Auto-augment policy and ring loss to improve the baseline performance by ~20%

OCR Development for price tags of Walmart products
- Designed a customized OCR for price tags for Walmart products without any computationally heavy model for faster real time tracking and deployment
- Performed N-way detection for digits, $, cents and '.' using Single Shot Detection model and achieved test accuracy of 100% with test recall of 95.65%

Graduate Research Assistant| BMGF Project| AiPEX Lab| Prof. C. Tucker | CMU, PA, Jan 2020-May 2020
- Spearheaded a team of 7 graduate students to generate fake videos for data augmentation using StyleGAN, First Order Motion & MonkeyNet implementation
- Embedded physiological signals in the synthetically generated videos, to diversify the dataset for motion-robust, non-contact heart rate estimation (Bounded Kalman Filter). Added the synthetic pulse mask with skin mask (GAN) to obtain fake videos that are difficult to detect due to presence of biological signal

KEY-PROJECTS
GITHUB_LINK:github.com/Swetap24

Multimodal Machine Learning| Prof. Louis Philippe Morency
- Prototyped late sensor fusion model for Autonomous Vehicle, to analyze the robustness of model against adversarial attack in fused model setting.

Speech Recognition| Prof. Ian Lane
- Developed an ASR & TTS based deidentification model to enhance the privacy of the user and compared performance against end-to-end VC model.

Machine Learning for real world Large Dataset| Prof. Virginia Smith and Prof. Heather Miller
- Performed data compression and reduced model complexity by network pruning using Tensorflow and was graded as the top 10/165 NN models
- Developed ML pipeline to predict the song hotness factor, for the MSD dataset. Utilized, PCA analysis and feature engineering to generate, visualize and analyze dataset. Linear regression, random forest and gradient boosted tree models were trained and evaluated through AWS EMR using Pyspark and MLlib

PCA| Prof. Yuejie Chi and Prof. Carlee Joe-Wong
- Implemented Principal Component Analysis (PCA) to obtain Eigenfaces for face identification for Yale Face recognition dataset under 64 different lighting condition

Speech to language Translation Model| Prof. Bhiksha Raj
- Deployed Beam Search Decoder (Built-from-scratch) & CTC Decoder to predict the phonemes in utterances achieving Levenshtein score of 9.47
- Modeled an attention-based LSTM transducer that generates a distribution over the next character conditioned on all previous characters; along with Pyramidal Bi-LSTM speech encoder to reduce computational complexity on Wall Street Journal data; Obtained Levenshtein score of 8.9

PATENT AND PUBLICATIONS

- A patent on IoT -automated temperature logging system with patent number IN201821021554 was granted provisional patent on 8th June 2018
- Co-authored a Paper on 'IoT based wireless temperature measurement system for PV modules' that was presented in IEEE WCPEC-7, Hawaii in June 2018
- Deblurring of Images and Barcode Extraction of PV Modules using Supervised Machine learning for Plant Operation and Maintenance; Paper got accepted by IEEE PVSC-47 conference June 2020, Calgary, Canada
- EL cracks Classification and detection in PV EL imaging analysis, Paper Accepted at IEEE PVSC-47 conference June 2020, Calgary, Canada
- Semi-supervision over Convolutional-Towering and Centerness in Lidar Point Cloud Based Object bounding box detection for Autonomous vehicle; Paper accepted by IRC-International Conference on Computational Vision 2020 conference, Venice, Italy

AWARDS AND ACHIEVEMENTS

- Awarded Best Presentation award at International Research Conference-ICCV 2020 Conference
- Featured as "Women in AI" in Carnegie Mellon University News Stories & Awarded GHC'2020 CMU ECE Scholarship