Sweta Priyadarshi

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EDUCATION

Carnegie Mellon University   Dec 2020
Masters in Science, Electrical & Computer engineering   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

Manipal Institute of Technology   May 2018
Bachelor of Technology, Electrical and Electronics Engineering **Minor:** Business Management   Manipal, India

SKILLS & EXPERTISE

Programming languages & Tools: Python, C++, SQL, MATLAB, PyTorch, TensorFlow, Keras, OpenCV
Expertise: Deep Learning, Machine Learning, Image Processing, Computer Vision, Signal Processing, Language Processing

PROFESSIONAL EXPERIENCE

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 as baseline; improved the network to obtain better evaluation metric on each task.
- Designed a baseline network to perform scene segmentation, depth estimation, surface normal prediction, edge detection and keypoint detection using one shared backbone network for Taskonomy dataset (5 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.

Amazon | Operations Engineer   Bangalore, India, April 2018-Sept 2018
- Worked on optimization and automation of processing equipment and green energy sourcing for power requirement (pan India) Amazon
- Designed Lighting automation & sorting system Automator deployment plan; Reduced the consumption of lighting in Indian warehouses by 43%

RESEARCH EXPERIENCE

Graduate Research Assistant| Biometrics Center, Cylab   Carnegie Mellon University, PA, Sept 2019-Ongoing
➢ **Developing plug-in detection using product code identification and object identification**
- Deployed Dilated Resnet-50 Model with cutmix-regularizer and ring loss to improve the baseline performance by approx. ~20%.
- Deployed EfficientNetB4 with cutout, cutmix, auto augment policy and ring loss to further improve the performance by 2%.
➢ **OCR Development for price tags of Walmart products**
- Designed a customized OCR for price tags without any computationally heavy model for faster real time tracking and deployment
- Performed N-way detection for digits, $, cents and '.' using SSD model and achieved test accuracy of 100% with test recall of 95.65%

Graduate Research Assistant| AiPEX Lab   Carnegie Mellon University, PA, Jan 2020-May 2020
- Embedded physiological signals in the synthetically generated videos to diversify the dataset for motion-robust, non-contact heart rate estimation, project funded by BMGF. Added the synthetic pulse mask with skin mask to obtain fake videos that are difficult to detect due to presence of biological signal.

KEY-PROJECTS   GITHUB_LINK:GITHUB.COM/SWETAP24

Machine Learning for real world Large Dataset
- 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 the dataset. Linear regression, random forest and gradient boosted tree models were trained and evaluated through AWS EMR using Pyspark and MLlib.

Centerness concept to develop 3D bounding box for autonomous Vehicle
- Improved the perception system of autonomous vehicle with average precision and average recall (IoU=0.7) for vehicle class exceeding the baseline PointRCNN model by 20~25% and achieved considerable improvement on KITTI benchmark dataset as well with AP of 92.07

Lucas - Kanade Based tracking
- Implemented LK tracker and performed motion subtraction method for tracking moving pixels in a scene along with inverse composition tracking.

Speech to language Translation Model
- Developed a Machine Translation/LAS model using cascaded LSTM networks for speech to language transcription
- 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-46 conference June 2019, Chicago, US
- 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 IRC-ICCV 2020 Conference.
- Featured as "Women in AI" in Carnegie Mellon University News Stories
- Awarded GHC'2020 CMU ECE Scholarship.