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

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, Embedded C, PyTorch, Numpy, Sckit, TensorFlow, Keras, OpenCV
Expertise: Computer Vision, Deep Learning, Machine Learning, Image Processing, Signal Processing, Language Processing

PROFESSIONAL EXPERIENCE

Nvidia | Deep Learning Intern Santa Clara, CA, May 2020-Ongoing
- Designed a network to perform scene segmentation, depth estimation, surface normal prediction, edge detection and keypoint detection using one shared backbone network for Taskonomy dataset.
- Implemented algorithm for scaling coefficient for Multi-tasking networks loss balance among tasks for scene understanding on NYUv2 dataset.
- Implementing algorithms to identify where to branch different tasks in multi-task networks and task balancing on taskonomy dataset..

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
- Proposed a Business Intelligent tracking model to track the real time update of package delivery from sort center to delivery station
- Designed Lighting automation & sorting system Automator deployment plan; Reduced the consumption of lighting in Indian warehouses by 43%

RESEARCH EXPERIENCE

Graduate Research Assistant| AiPEX Lab Carnegie Mellon University, PA, Jan 2020-Present
- Embedding physiological signals in the synthetically generated videos to diversify the dataset and make the mobile phone camera based vital signal detection more robust. Video generation (GANimation) for motion-robust, non-contact heart rate estimation, project funded by BMGF.

Graduate Research Assistant| Biometrics Center, Cylab Carnegie Mellon University, PA, Sept 2019-Jan 2020

Customized 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%

KEY-PROJECTS

GITHUB_LINK:GITHUB.COM/SWETAP24

Machine Learning for real world Large Dataset
• Performed data compression and reduced model complexity by network pruning and was graded as the top 10/165 NN models.

3D Reconstruction
- Implemented a method to automatically match points taking advantage of epipolar constraints and make a 3D visualization of images.
- Implemented RANSAC and bundle adjustment to further improve the algorithm for 3D reconstruction.

Centerness concept to develop 3D bounding box for autonomous Vehicle
- Proposed solution based on Centerness for 3D bounding box detection using deep learning models, leveraging LiDAR Pointclouds as inputs.
- 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 87.24

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

Augmented Reality using Planar Homographies
• Developed Point correspondences between two images and used it to estimate the homography and implemented an AR video application.

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.
- Awarded Bill & Melinda Gates Fund for project based on AI healthcare
- Featured as "Women in AI" in Carnegie Mellon University News Stories.