Jeet Kanjani

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EDUCATION

Carnegie Mellon University - School of Computer Science — Pittsburgh, PA
Master of Science in Computer Vision (4.22/4.33) — Jan 2021 - May 2022

The LNM Institute of Information Technology — Jaipur, India
Bachelor of Engineering in Computer Science (7.53/10.0) — Jun 2014 – Apr 2018

EXPERIENCE

CMU Argo AI Center for Autonomous Vehicle Research — Pittsburgh, PA
Research Collaborator — Jan 2021 - May 2022

- **Research**: Working on 3D object detection using multimodal streams under Prof Deva Ramanan. Shown that the performance of 3D object detection using Lidar drastically reduces with distance. Developing metrics on NuScenes dataset to indicate this flaw and working on Image and Lidar fusion algorithms to improve performance on large distances.

NVIDIA — Santa Clara, CA (Remote)
Software Intern — May 2021 - Aug 2021

- **Development**: Integrated end to end skeletal based action recognition functionality into Metropolis MDX (meant for horizontal Scalability) and eMDX (meant for low latency edge devices) pipelines.
- Worked with DeepStream, GStreamer, Kafka, Redis, Spark, GRPC, Docker, Triton Inference Server and ELK for the pipeline code. Containerized all services of both pipelines for deployment and prototyping.
- Used DetectNet_v2(Resnet34), NvDCF tracker, OpenPose and ST-GCN models for various model inferences in the pipelines.
- Built evaluation framework in python with debugging tools including tools to profile latency and memory of the pipelines.

Oxehealth Ltd — Oxford, UK
Research Engineer, Research Intern — May 2018 - Dec. 2020

- **Research**: Significantly contributed towards ML models for Person tracking, Fallen Person Detection, Person on Edge of Bed detection and Sleep Staging from video thereby improving the reduction of patients falling from 33% to **48%**. [Link]
- Achieved a 22% improvement in Yolov3 mAP by joint learning it with an optical flow based motion model.
- **Development**: Developed and maintained GRPC services to serve deep learning models in production. Switched inference hardware to Coral TPU reducing inference time by **32%** and deployment cost by 10X.
- **Industrialize**: Supervised 3 interns to build active learning annotation tools to reduce time to production. Built an evaluation framework in PySpark for regression testing which is extensively used across teams.
- **Achievement**: Among 2 out of 45 candidates selected globally for a 6-month research internship programme at Oxehealth Ltd. Offered a full time position based on exceptional performance during the internship.

University of Oxford — Oxford, UK
Research Intern — May 2017 - Sept. 2017

- **Research**: Worked with a DPhil student at **Torr Vision Group** on 3D Pose Estimation from Monocular images using structured learning approaches. Improved on previously built 2D Pose Estimator using CRF as RNN. [Link]
- **Development**: Contributed a CUDA implementation of HOG-SVM based Pedestrian Detection to the **OxSight glasses** used by the visually impaired. [Link]

Tonbo Imaging — Bangalore, India
Research Intern — Jan. 2018 - April 2018

- **Research**: Addressed the issue of long term tracking of objects in thermal infrared videos by using fully convolutional siamese networks (SiameseFC) with LSTMs. Achieved a 2.9% AUC improvement on Tonbo's infrared dataset. [Link]
- **Development**: Implemented CUDA version of existing Centroid Object Tracking and Moving Target Indication Algorithms used in the night vision cameras. Achieved speedups of more than 100x over CPU.

Blink Digital — Mumbai, India
Software Development Intern — May 2016 - Aug. 2016

- Developed a Virtual Dressing application using Kinect and Unity3D. Made tracking 1.3X faster by clustering skeletal data.

KEY PROJECTS

- **QuickHOG**: end-to-end CUDA object detection pipeline based on HOG-SVM — *May 2017 - Sept 2017*
  - **80X** run time improvement over sequential implementation and **1.2X** over state of the art parallel implementation. [Link]
  - Implemented a novel NMS by adopting a *map/reduce* parallelization pattern. [Link]
  - Deployed to OxSight AR glasses. [Link]

TECHNICAL SKILLS

- **Programming Languages**: : C, **C++**, **Python**, Java, Scala
- **Tools**: **Pytorch**, **Tensorflow**, Caffe, Kafka, Redis, **Spark**, AWS, **Pandas**, **Docker**, SQL, Unity3D, Flask