Sanjeev Kumar

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Education

Munich, Germany	Technical University of Munich	Oct 2015 – March 2018

- M.Sc. in Informatics (Specialization: Computer Vision and Machine Learning)
- Inter-disciplinary Project: Cell Detection in Lens-free Microscopy Videos (published in MICCAI'17)
- Coursework: Machine Learning; Multiple View Geometry; Deep Learning for Computer Vision; Vision Based Navigation.

Hamirpur, India	National Institute of Technology	July 2008 – May 2012

- B.Tech. in Computer Science and Engineering
- Coursework: Object Oriented Programming; Data Structure and Algorithms; Theory of Computation; Operating System; Computer Networks.

Professional Experience

Machine Learning Engineer	Lyft Level 5, Self-Driving Division, Munich	Aug 2018 – Present

Technologies Used: Python, C++, PyTorch, OpenCV

Semantic Map Generator
- Primary contributor and owner of the component that generates the HD semantic map required for on car perception, prediction and planning.
- Implemented different geo spatial algorithms and ML pipelines to speed the map creation with human annotators in the loop.

Traffic Light Placement
- Implemented a 3D placement algorithm for detecting and localizing traffic lights in point clouds.
- Integrated the automatic traffic light placement pipeline with Semantic Map Generator and QC tools for validation/correction by human curators.

Road Map Element Detection
- Implemented an annotation pipeline for creating ground truth datasets to extract geometries for different types of road elements (lanes, crosswalks, arrows, etc.).
- Led the implementation of semantic segmentation model training and shape extraction pipeline on the top down views created from projected camera images.
- Mentored an intern to integrate different road element models in QC tools and Semantic Map Generator.

LiDAR Point Cloud Annotation
- Designed and implemented a 3D detector (PointRCNN) and tracker (Kalman filter-based) pipeline to pre-populate object tracks to speed up the annotation of dynamic agents (cars, pedestrians, etc.) in LiDAR point clouds.
- Worked closely with the teams in Palo Alto to integrate the tracker pipeline in the UI tool for point cloud annotation.

Software Engineer (Part-time)	Terraloupe Gmbh, Munich	Aug 2016 - April 2017

Technologies Used: Python, Keras, OpenCV
- Experimented with various deep convolutional network architectures (PSPNet, UNet etc.) for semantic segmentation of roof objects attributes (solar panel, chimney etc.) from aerial images.
- Implemented geo spatial algorithms that used segmentation output and point clouds to extract the available roof area for installing solar panels across different German cities.

Software Development Engineer	Amazon, India	Oct 2014 – Oct 2015

Technologies Used: Java, RDS, DynamoDB, Herd (Workflow-orchestration Engine)
- Optimized the seller data ingestion pipeline by detecting duplicate offers in daily XML feed.
- Built a system that automatically sends notifications (SMS, email) to sellers for older offers on junglee.com and implemented the deletion workflow that could be triggered via one-click or a missed call.

Software Developer	Drishti Soft Solutions, India	June 2012 – Oct 2014

Technologies Used: Java, JAX-RS, Postgres
- Led the design and implementation of REST API for the core call center functionality (queuing calls, allocating agents etc.). Worked closely with CRM providers for integrating the API.
- Implemented a real-time monitoring system for analyzing the call volume and SLA in a call center.