

## EDUCATION

---

- ETH Zurich, Switzerland** Sep 2019 - Ongoing  
MSc in Computational Science (Specialization: Robotics) [Transcript](#)  
**Courses:** Computer Vision, 3D Vision, Optimal Control, Deep Learning, Graphical Models
- IIT Roorkee, India** July 2013 - May 2017  
BSc in Civil Engineering (Minor in Computer Science and Engineering) [Transcript](#)  
**Courses:** Data Structures, Algorithms, Database Systems, Numerical Methods, Probability and Statistics

## RELEVANT PROFESSIONAL EXPERIENCE

---

- Research Assistant at Intelligent Maintenance Systems Lab, ETH Zurich** May 2020 - Ongoing
- Working on calibration of engineering systems (e.g. Batteries) using deep reinforcement learning
  - Designed Actor-Critic based RL algorithm with Lyapunov constraint for stable tracking of the system parameters
- Masters Student at IBM Research, Zurich, Switzerland** June 2020 - Dec 2020
- Worked on Continual Learning (CIL) problem for Image Classification based on Deep Neural Networks (DNN)
  - Implemented data-distillation based regularization method to reduce *forgetting* in DNNs in medical images
- Data Scientist at ZS Associates, Pune, India** Jul 2017 - Jul 2019
- Marketing Sequence Optimization for Customer Centric Marketing (Python, Spark)**
- Combined Machine Learning (Convolutional Neural Network) and Optimization (Genetic Algorithms) techniques to design optimal marketing sequence maximizing the sales-response from the physicians
  - Integrated the algorithm with the existing systems using PySpark accelerator for real-time suggestions

## PUBLICATIONS

---

- PE Sarlin\*, [A Unagar\\*](#), M Larsson, H Germain, C Toft, V Larsson, M Pollefeys, V Lepetite, T Sattler  
“**Back to the Feature: Learning Robust Camera Localization from Pixels to Pose**” *CVPR’21*
- [Ajaykumar Unagar](#), Yuan Tian, Mauel Arias Chao, Olga Fink [[paper](#) & [talk](#)]  
“**Battery Model Calibration with Deep Reinforcement Learning**” *NeurIPS’20W & Energies*
- [Ajaykumar Unagar\\*](#), Philipp Lindenberger\*, Nikolaos Tselepidis\*, PE Sarlin [[paper](#) & [talk](#)]  
“**6-DoF Camera Pose Refinement using Feature-Metric Optimization**” *CVPR’20W*

## RELEVANT PROJECTS

---

- Deep-direct visual localization using learned feature optimization (PyTorch)** Feb 2020 - Nov 2020
- Direct visual localization through image alignment using learned invariant features from Deep Neural Network
  - Using unrolled LM optimizer end-to-end training of the features from GT pose and reference sfm model
  - Published initial version at CVPR 2020 Workshop on [VisLocOdom](#) and full version accepted to CVPR 2021
- Multi-Task Learning framework for Autonomous Driving (PyTorch)** Feb 2020 - June 2020
- Designed multi-task network for *semantic segmentation* and *depth estimation* of natural scenes
  - Used task-distillation network with Encoder-Decoder structure to achieve balance accuracy on both tasks
- Robotic Control using Computational Methods (C++)** Feb 2020 - June 2020
- Designed an Open-Loop Controller for Six-Legged robots using Inverse Kinematics
  - Implemented different gaits for Robotic movements and the goal following trajectory optimization algorithm
- Parallel Algorithms for Subgraph Isomorphism (C++, OpenMP, MPI)** Sept 2019 - Jan 2020
- Implemented parallel version of exact Graph Matching algorithms VF2 and Glasgow in C++
  - Different parts of the algorithms are further optimized for multi-threaded systems using OpenMP and MPI

## TECHNICAL SKILLS

---

	Programming	Tools
Experienced	Python, C++	PyTorch, Sklearn, MLflow, Git, OpenCV, OpenMP
Intermediate	C, SQL, R	ROS, Tensorflow, Spark, Matlab, MPI