

# ANKIT DHALL

adhall@ethz.ch | For latest information: ankitdhall.github.io

## EDUCATION

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<b>ETH-Zürich, Switzerland</b> <b>Master of Science in Robotics, Systems &amp; Control</b> Thesis: Learning Representations for Images With Hierarchical Labels <a href="#">↗</a> Computer Vision, Machine Learning and Robotics	2017 - 2019
<b>Vellore Institute of Technology, Chennai, India</b> <b>Bachelor of Technology in Computer Science &amp; Engineering</b> Thesis: LiDAR-Camera Calibration using 3D-3D point correspondences <a href="#">↗</a> Teaching Assistant - <i>Data Structures and Algorithms, Fall 2015</i>	2013 - 2017
<b>St. George's College, Mussoorie, India</b> High-school	2004 - 2013

## EXPERIENCE

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<b>Seervision AG</b> <a href="#">↗</a> <i>Computer Vision and Machine Learning</i>	November 2019 - Present
<ul style="list-style-type: none"><li>Developing on the computer vision and machine learning pipeline.</li></ul>	
<b>Learning and Adaptive Systems Group, ETH Zurich</b> <a href="#">↗</a> <i>Advisors: <a href="#">Andreas Krause</a>, <a href="#">Anastasia Makarova</a>, <a href="#">Octavian Eugen-Ganea</a></i>	<b>Master thesis</b> March 2019 - September 2019
<ul style="list-style-type: none"><li>Learning representations for images with hierarchical labels.</li></ul>	
<b>NuTonomy, Singapore</b> <a href="#">↗</a> <i>Computer Vision and Machine Learning</i>	<b>Autonomous Vehicle Intern</b> September 2018 - February 2019
<ul style="list-style-type: none"><li>Deployable safety-critical perception system using deep learning and exploiting map priors.</li></ul>	
<b>Academic Motorsports Association of Zurich (AMZ)</b> <a href="#">↗</a> <i>Formula Student Driverless 2019</i>	<b>Head of Perception</b> November 2018 - September 2019
<ul style="list-style-type: none"><li>Head of Perception. Technically lead and manage the Perception team.</li></ul>	
<b>Academic Motorsports Association of Zurich (AMZ)</b> <a href="#">↗</a> <i>Formula Student Driverless 2018</i>	<b>Computer Vision</b> November 2017 - September 2018
<ul style="list-style-type: none"><li>Working on developing a customized vision pipeline for robust detection and accurate localization of cones (upto 15 meters) in 3D for Formula Student Driverless 2018 season for FS Germany and FS-Italy races. Developing real-time key-point regression with novel priors for pose estimation with mono camera. Competition video <a href="#">↗</a></li></ul>	
<b>Robotics Research Center, IIIT-Hyderabad</b> <a href="#">↗</a> <i>Advisor: <a href="#">K. Madhava Krishna</a></i>	<b>Researcher/Bachelor's thesis</b> January 2017 - May 2017
<ul style="list-style-type: none"><li>Proposed a novel pipeline and experimental setup to find accurate rigid-body transformation for extrinsically calibrating a low-resolution LiDAR (VLP-16) and camera(s) using 3D-3D correspondences. The ROS package has been forked widely and usage can be found at: <a href="https://github.com/ankitdhall/lidar_camera_calibration">https://github.com/ankitdhall/lidar_camera_calibration</a> <a href="#">↗</a>.</li></ul>	
<b>Autonome Intelligente Systeme, University of Freiburg</b> <a href="#">↗</a> <i>Advisors: <a href="#">Wolfram Burgard</a>, <a href="#">Abhinav Valada</a></i>	<b>Researcher</b> June 2016 - August 2016
<ul style="list-style-type: none"><li>Created a Mixture of Deep CNN Experts for robust semantic segmentation by adaptively fusing complementary modalities (RGB and depth, for instance). Implemented segmentation on NVIDIA TX1 and generated way-points for an all-terrain vehicle that autonomously navigated ~4.5km of rough, forested terrain. Project page: <a href="https://deepsceen.cs.uni-freiburg.de">https://deepsceen.cs.uni-freiburg.de</a> <a href="#">↗</a></li></ul>	
<b>Microsoft Corporation - Campus Connect</b> <i>Mentor: <a href="#">Akanksha Gupta</a></i>	<b>Software Developer</b> June 2015 - September 2015
<ul style="list-style-type: none"><li>Created a music discovery engine using Flask that fetches queries and visualizes the data through D3.js. Judged as the winning idea and implementation at Microsoft Campus Connect and Most-Popular vote at Yahoo! Accenture Innovation Jockeys 4.</li></ul>	

- Collaborated to improve vision algorithms by introducing crowdsourced human cognition in the pipeline. Re-ordered images for human workers based on confidence scores to improve system accuracy.


## SELECTED PUBLICATIONS

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- **Ankit Dhall**, Anastasia Makarova, Octavian Ganea, Dario Pavllo, Michael Greeff, Andreas Krause  
**Hierarchical Image Classification using Entailment Cone Embeddings**  
<https://arxiv.org/abs/2004.03459>   
*CVPR Differential Geometry in Computer Vision and Machine Learning Workshop, 2020*
- **Ankit Dhall**  
**Learning Representations for Images With Hierarchical Labels**  
<https://arxiv.org/abs/2004.00909>   
*Master thesis, Zurich 2019.*
- **Ankit Dhall**, Dengxin Dai, Luc Van Gool  
**Real-time 3D Traffic Cone Detection for Autonomous Driving**  
<https://arxiv.org/abs/1902.02394>   
*IEEE Intelligent Vehicles (IV), Paris 2019.*
- Abhinav Valada, Johan Vertens, **Ankit Dhall**, Wolfram Burgard  
**AdapNet: Adaptive Semantic Segmentation in Adverse Environmental Conditions**  
<http://ais.informatik.uni-freiburg.de/publications/papers/valada17icra.pdf>   
*IEEE International Conference on Robotics and Automation (ICRA), Singapore, 2017.*
- **Ankit Dhall**, Kunal Chelani, Vishnu Radhakrishnan, K.M. Krishna  
**LiDAR-Camera Calibration using 3D-3D point correspondences**  
<http://arxiv.org/abs/1705.09785>   
*Bachelor thesis and Research internship, May 2017*
- Abhinav Valada\*, **Ankit Dhall\***, Wolfram Burgard  
**Convolved Mixture of Deep Experts for Robust Semantic Segmentation**  
<http://ais.informatik.uni-freiburg.de/publications/papers/valada16irosws.pdf>   
*IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS) Workshop, Daejeon, Korea, 2016.*
- Andreas Veit, Michael Wilber, Rajan Vaish, Serge Belongie, James Davis, **Ankit Dhall** et al.  
**On Optimizing Human-Machine Task Assignments**  
<http://arxiv.org/abs/1509.07543>   
*WiP at AAAI Conference on Human Computation & Crowdsourcing (HCOMP), San Diego, USA, 2015.*

## LANGUAGE SKILLS

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<b>Hindi</b>	Mother tongue
<b>English</b>	Bilingual proficiency (TOEFLiBT: L:30 R:30 W:30 S:24 = 114/120)
<b>German</b>	Elementary proficiency (Basic-German Level A1.1 - <b>DEUTSCH-UNI ONLINE</b>  )
<b>Italian</b>	Elementary proficiency



## TECHNICAL SKILLS

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<b>Programming Languages</b>	Python, C++, MATLAB
<b>Libraries, Frameworks &amp; APIs</b>	PyTorch, OpenCV, basic ROS, basic Caffe
<b>Miscellaneous</b>	Adobe Photoshop, NVIDIA TX1, Latex

## MOOCs AND OTHER COURSES

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- Introduction to Probability The Science of Uncertainty 6.041x, edX Honor Code Certificate - [MITx](#) 
- Machine Learning, Coursera Honor Code Certificate - [STANFORD UNIVERSITY](#) 
- Artificial Intelligence CS188x - audited online and on edX - [UNIVERSITY OF CALIFORNIA, BERKELEY](#)
- Discrete Optimization - audited on Coursera - [UNIVERSITY OF MELBOURNE](#)

## ACADEMIC AWARDS AND ACHIEVEMENTS

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- **DAAD-WISE Scholarship 2016 to pursue research in Germany**; one of the **160 students from all over India**
- Awarded for academic excellence for **2013-14, 2014-15, 2015-16 and 2016-17**

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\* These authors contributed equally

- Voted most popular project at Yahoo! and Accenture's Innovation Jockeys 4 and one of the 10 finalists out of more than 2500+ teams across India and invited to Bangalore to present our idea
- **Music Discovery** engine judged as the **winning idea** and **implementation** at **Microsoft Campus Connect 2015**.
- On-site **Finalist at ACM ICPC**, Asia Regional, 2014 and **10th** in **GRIET Code**, 2015 coding competitions
- Awarded for **excellence** in **Computer Science** and **Physics** in high school (ISC)
- **School topper** in the ICSE examinations and **awarded scholarship** for 2011 and 2012