ANKIT DHALL

adhall@student.ethz.ch | ankitdhall.github.io

EDUCATION

ETH-Zürich, Switzerland   2017 - present
Master of Science in Robotics, Systems & Control
Areas of interest: Computer Vision, Machine Learning and Robotics
Coursework: Computer Vision, Machine Learning, Probabilistic AI, Vision Algorithms for Mobile Robotics, Robot Dynamics, 3D Vision$^+$, Perception and Learning for Robotics$^+$, Deep Learning for Computer Vision (Seminar)$^+$, Autonomous Mobile Robots$^+$, Programming for ROS$^+$ ($^+$ on-going)

Vellore Institute of Technology, Chennai, India   2013 - 2017
Bachelor of Technology in Computer Science & Engineering
Thesis: LiDAR-Camera Calibration using 3D-3D point correspondences ⤢
CGPA: 9.7/10, ranked **2nd out of 147** students in department
Teaching Assistant - *Data Structures and Algorithms, Fall 2015*

St. George's College, Mussoorie, India   2004 - 2013
Class 12, **95.50%** in *Indian School Certificate Examination(ISC) 2013*
Class 10, **94.16%** in *Indian Certificate of Secondary Education Examination(ICSE) 2011*

EXPERIENCE

Autonomous Systems Lab (ASL), ETH-Zürich ⤢   **Perception and Learning for Robotics project**
Advisors: Renaud Dubé, Daniel Dugas, Dr. Cesar Cadena   February 2018 - present
- Detecting spurious regions affected by challenging weather conditions (smoke and rain) in a LiDAR scan.

Computer Vision Group (CVG), ETH-Zürich ⤢   **3D Vision project**
Advisors: Ian Cherabier, Dr. Martin R. Oswald   February 2018 - present
- Fusing multiple sensor data for semantic 3D reconstruction.

Academic Motorsports Association of Zurich (AMZ) ⤢   **Computer Vision**
Formula Student Driverless 2018   November 2017 - present
- Working on developing a customized hardware and software computer vision pipeline for robust detection and accurate localization of traffic cones (upto 20 meters) in 3D for Formula Student Driverless 2018 season for FS Germany and FS-Italy races.

Robotics Research Center, IIIT-Hyderabad ⤢   **Researcher/Bachelor's thesis**
Advisor: Prof. K. Madhava Krishna   January 2017 - May 2017
- 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: https://github.com/ankitdhall/lidar_camera_calibration ⤢ .

Autonome Intelligente Systeme, University of Freiburg ⤢   **Researcher**
Advisors: Prof. Wolfram Burgard, Abhinav Valada   June 2016 - August 2016
- 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: https://deepscene.cs.uni-freiburg.de ⤢

Microsoft Corporation - Campus Connect   **Software Developer**
Mentor: Akanksha Gupta   June 2015 - September 2015
- Created a music discovery engine using Flask that fetches queries and visualizes the data through D3.js. The engine allows search by location, artist, and intrinsic song parameters. Judged as the winning idea and implementation at Microsoft Campus Connect and Most-Popular vote at Yahoo! Accenture Innovation Jockeys 4.

University of California, Santa Cruz + Stanford Research ⤢   **Researcher**
Advisors: Prof. James Davis, Dr. Rajan Vaish   January 2015 - June 2015
- 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.

Publications

- 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
  Convoluted 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

Hindi	Mother tongue
English	Bilingual proficiency (TOEFLiBT: L:30 R:30 W:30 S:26 = 114/120)
German	Elementary proficiency (Basic-German Level A1.1 - **Deutsch-Uni Online** ↗)

Technical Skills

Programming Languages	C++, Python, MATLAB
Libraries, Frameworks & APIs	OpenCV, basic ROS, basic Caffe
Miscellaneous	Adobe Photoshop, NVIDIA TX1, Latex

MOOCs and other courses

- 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

- **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**
- 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**; Official media interview piece on InnovationJockeys website ↗
- 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

Leadership and Extra-curricular Activities

- **Head of Design and Member of the Editorial Board** at St. George's College, 2011-2013
- Member of the **Organizing Committee** at VIT Chennai Model UN, 2015
- Represented **college**(2013-2015) and **high-school**(2010-2012) in **tennis**
- **Scrabble finalist** at Saarang'15, IIT-Madras and **winner** at Literario'14 and Vibrance'15 at VIT Chennai
- **Active organizing member of the Quiz Club** and **podium finishes** in various intra-college quizzes
- Stood **4th** in **the Limca Book of Records Quiz**, Regionals, 2011 among **180+ competing teams**
- Played **rhythm guitar** in the school band, 2011-2013
- **Designed brochures, t-shirts, invitations** and **head of design** at various **inter-school events** in high-school
- Actively involved in the **Social Welfare Club** (2012) in high-school

---

* These authors contributed equally