Nikhil Bharadwaj **Gosala**

Master's Student In Computer Science At ETH Zürich · Head Of Perception and Software Architecture At AMZ Driverless

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Objective

To pioneer research and development in the field of autonomous driving, especially in perception, planning and behaviour prediction, by utilising my knowledge of Computer Vision and Deep Learning to make driving universally accessible and improve the safety of public roads.

Education

ETH Zürich
Zürich, Switzerland

MSc. in Computer Science (Visual Computing)
September 2017 - Present

Birla Institute of Technology and Science (BITS), Pilani
Hyderabad, India

Bachelor of Engineering (Honours) in Computer Science
August 2013 - July 2017

- CGPA: 9.50 / 10
- Awarded merit scholarship for excellent academic performance for five consecutive semesters (Feb 2015 - Jul 2017)
- Teaching Assistant: Information Retrieval (Fall Semester)

Technical Skills

Areas of Expertise	Computer Vision, Deep Learning, Natural Language Processing
Programming Languages	C, C++, Java, Python, MATLAB
Frameworks and APIs	OpenCV, ROS, Tensorflow, PyTorch

Major Projects

nuTonomy/Aptiv
Singapore

Autonomous Vehicle Intern (Perception)
February 2019 - July 2019

- Designed and developed an Extended Object Tracker for detecting and tracking objects in real-time using radar measurements alone.
- Worked on improving the detection performance of Neural Networks, especially for distant objects, using early fusion of multiple sensor modalities.

Akademischer Motorsportverein Zürich (AMZ) Driverless
Zürich, Switzerland

LiDAR Responsible
November 2017 - August 2018

Topic: "Cone and Colour Detection using 3D LiDAR Point Cloud"

Advisors: Renaud Dubé, Abel Gawel, Mark Pfeiffer

- Developed a 3D LiDAR pipeline to detect cones and estimate their colour in real-time.
- Developed a custom Convolutional Neural Network (CNN) architecture to estimate the colour of cones using the intensity patterns of the point cloud return.
- Won the Driverless competition in the Formula Student events in Italy and Germany.

Dept. of Computer Science, BITS Pilani
Hyderabad, India

Undergraduate Research Assistant
August 2016 - December 2016

Topic: "Language Modelling and PoS Tagging using Deep Learning for Telugu"

Advisor: Prof. Aruna Malapati

- Studied sentence structures of Telugu language to evaluate the feasibility of applying established deep learning techniques for automated sentence generation and part-of-speech tagging.
- Used RNNs with LSTM units to automatically tag the various entities and parts-of-speech, and generate syntactically coherent Telugu sentences.

Topic: "Extraction of Unallocated and Deleted Blocks from Cloud vDisk" *August 2015 - May 2016*

Advisor: Prof. G. Geethakumari

- Developed a state-of-the-art cloud forensics tool that can be used to acquire, analyse, and report all artefacts (vDisk, vRAM, Service Logs) pertaining to a cloud.
- Used text- and document-similarity approaches to identify and retrieve all the blocks similar to a given block.
- Employed concept mining to associate corresponding blocks and reconstruct deleted files.

COMSYS Lab, RWTH Aachen

Aachen, Germany

Research Intern *May 2016 - July 2016*

Topic: "In-Kernel Network Packet Acceleration for MySQL Database"

Advisor: Dr. rer. nat. Oliver Hohlfeld

- Modified a custom linux kernel and MySQL to integrate MySQL with the SANTA Architecture to increase the throughput of network cards and reduce the reply latency of database queries by caching replies in the kernel.
- Designed and executed comprehensive evaluation tests to validate the actual speedup against the expected speedup.
- Proposed modifications to the kernel to further improve the network packet acceleration.

J.P. Morgan Chase & Co.

Bengaluru, India

Software Development Intern *February 2017 - July 2017*

- Developed visualization and analysis modules for an in-house real-time trading platform (Cortex) using C# and Java.
- Added access control to restrict users' access to only the entitled dashboards.
- Logged the usage patterns of the users for feedback and analytics, and streamed them to the cloud using the Splunk framework.

Publications

Redundant Perception and State Estimation for Reliable Autonomous Racing

Nikhil Bharadwaj Gosala, Andreas Bühler, Manish Prajapat, Claas Ehmke, Mehak Gupta, Ramya Sivanesan, Abel Gawel, Mark Pfeiffer, Mathias Bürki, Inkyu Sa, Renaud Dubé, Roland Siegwart

International Conference on Robotics and Automation (ICRA) 2019, Montréal, Canada

https://arxiv.org/abs/1809.10099

CLOSER: Applying Aggregation for Effective Event Reconstruction of Cloud Service Logs

BKSP Kumar Raju, Nikhil Bharadwaj Gosala, G. Geethakumari

Proceedings of the 11th International Conference on Ubiquitous Information Management and Communication Article No. 62, Beppu, Japan, 2017.

https://dl.acm.org/citation.cfm?doid=3022227.3022288

Awards and Achievements

- Designed, developed, and published a Windows Phone app "Hiker" which had **over 11,000 downloads**.
- **Stood 6th** in the IEEE Programming League (IEEEPL), an all India coding competition held in 2015.
- Selected in the *Catch Them Young* (CTY) programme organized by Infosys, **among the top 30 students** in Hyderabad, India.

Leadership and Extracurricular Activities

- **Head of Perception and Software Architecture** at AMZ Driverless for the Formula Student 2019 season.
- **Vice President** (Projects) of Centre for Entrepreneurial Leadership (CEL) at BITS Pilani, Hyderabad Campus.
- **Microsoft Student Partner** in 2014-15.
- Member of the organizing team of TEDxBITSHyderabad in 2014.
- Member of the Department of Photography (DoPY) at BITS Pilani, Hyderabad from 2014 - 2017.
- Member of BITS Pilani, Hyderabad tennis team from 2013 - 2017.