

## Research Interests

Deep learning, computer vision, 3-D reconstruction, autonomous vision.

## Education

- 2016-2020 **Birla Institute of Technology and Science (BITS Pilani), Pilani, India.**  
Bachelor of Engineering (Honors) in Computer Science  
*Minor concentration in Sociology & Climate Change*
- 2014-2016 **All India Senior School Certificate Examination, New Delhi, India.**  
CBSE Class 12 | Physics, Mathematics, Chemistry, English, CS
- 2013-2014 **All India Secondary School Examination, New Delhi, India.**  
CBSE Class 10

## Publications

- 2020 **IEEE International Conference on Pattern Recognition (ICPR-2021), Milan, Italy.**  
Rishav\*, René Schuster\*, Ramy Batrawy, Oliver Wasenmüller and Didier Stricker, "ResFPN: Residual Skip Connections in Multi-Resolution Feature Pyramid Networks for Accurate Dense Pixel Matching"
- IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS-2020), Las Vegas, NV, USA.**  
Rishav\*, Ramy Batrawy\*, René Schuster, Oliver Wasenmüller and Didier Stricker, "DeepLiDARFlow: A Deep Learning Architecture For Scene Flow Estimation Using Monocular Camera and Sparse LiDAR"

## Experience

- May'20 - **Chloropy Technologies, Singapore.**
- July'20 Research Intern | *Tensorflow*
- Working on unsupervised deep learning algorithms for monocular depth estimation using drone images for estimating plant height.
- Jun'19 - **Augmented Vision, DFKI, Kaiserslautern, Germany.**
- Dec'19 Research Intern with **Prof. Dr. Didier Stricker** | *Tensorflow, PyTorch*
- Worked on deep learning for scene flow estimation in autonomous vehicles for my bachelor thesis.
  - Developed a novel deep learning architecture for end-to-end prediction of scene flow using monocular images and sparse LiDAR measurements.
  - Developed a novel design element which improved results for all dense matching tasks
- Apr'18 - **Pixxel, Bengaluru, India.**
- Aug'18 Machine Learning Engineer | *Tensorflow, BigQuery*
- Worked on Deep Learning for cleaning and extraction of useful bands in hyperspectral images, used google BigQuery for accessing LANDSAT data.
  - Implemented HSID-CNN in tensorflow for denoising hyperspectral images.

Aug'18 - **Central Electronics Engineering Research Institute, Pilani, India.**

Dec'18 Research Assistant | *Keras, Tensorflow*

- Worked on Semantic Segmentation of Power-lines in images captured via drone & unsupervised machine learning algorithms for structural health monitoring.
- Integrated a new backbone into segmentation models for semantic segmentation **[code]**
- Implemented auto-regressive model for feature extraction and several unsupervised algorithms like one-class SVM for final classification. **[code]**

## Coursework

**Computer Science** Data Structures and Algorithms, Design and Analysis of Algorithms, Operating Systems, Database Management, Neural Networks and Fuzzy Logic, Computer Networks, Machine Learning, Compiler Construction, Object Oriented Programming, Pattern Recognition

**Mathematics** Linear Algebra, Probability and Statistics, Differential and Integral Calculus

## Software Skills

**Languages** Python, Java , C, C++

**Framework** Tensorflow, PyTorch, Keras

## Academic Projects

Jan'20- **Visual Commonsense Reasoning.**

Present Will be working under *Dr. Surekha Bhanot, HoD, Electronics Engineering* on deep learning for visual commonsense reasoning. *Tensorflow*

Jan'19- **Compiler Construction.**

May'19 Constructed a compiler for a given language specification in C language, this included the development of lexer, parser, semantic-analyzer, code-generator

Apr'18 **Human Action Recognition.**

Implemented 3-D CNN architecture for human action recognition. Trained and tested the model on KTH dataset | *Keras*

May'20 **Active Learning.**

Implemented active learning algorithms on MNIST, tested various techniques like Query by committee & uncertainty sampling, also tested cluster based testing technique where whole dataset was labelled on the basis of just 10% of points. | *Python [code]*

## Teaching

Jan'20- **Head TA, Neural Networks.**

May'20 Head TA for the course BITS F312 Neural Networks, guided a team of 10 TAs and assisted Prof. Surekha Bhanot for designing assignments and course projects for a class of 150 students.

## Positions

Jan'17- **Senior Member, BITS-ACM.**

Present Member of the student chapter of ACM at BITS Pilani. Regular contributor to the machine learning special interest group.

Aug'17- **Team Leader, Nirmaan Organisation.**

Aug'18 Led the social project Gyanbodh Harinagar for the stated time, introduced the concept of Activity Based Learning to Kids of the community.

## Achievements

- May'2016 **All India Secondary School Exam.**  
Awarded certificate of excellence by Govt. of India for scoring 99.0/100.0 in Mathematics.
- Apr'2016 **BITS Admission Test.**  
Obtained a score of 390/450 in BITSAT, test for admission to BITS Pilani.
- May'2016 **Joint Entrance Examination (Main), CBSE, Govt. of India.**  
Obtained an all India percentile of 99.90 out of 1.2 million candidates.
- May'2014 **National Talent Search Exam, Govt. of India.**  
One amongst 4,000 people selected for the scholarship out of 0.5 million candidates.

## References\*

Prof. Dr. Oliver Wasenmüller, HS-Mannheim  
Mr. René Schuster, DFKI Kaiserslautern  
Prof. Dr. Didier Stricker, DFKI & TU Kaiserslautern  
Prof. Dr. Surekha Bhanot, BITS Pilani

*\*Contact details available on request*