Rishav

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Education

BITS Pilani, Pilani, India
B.Eng, Computer Science, Aug 2020
Minor Concentration in Sociology

Experience

Research Intern — Chloropy Technologies
May'20 - July'20 — Singapore
Worked on unsupervised deep learning algorithms for monocular depth estimation using drone images for estimating plant height. Assisted in curating a proper dataset for depth estimation for Chloropy.

Bachelor Thesis — Augmented Vision, DFKI
Jun'19 - Dec'19 — Kaiserslautern, Germany
Advisor: Prof. Didier Stricker
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.

Machine Learning Engineer — Pixxel
Apr'18 - Aug'18 — Bengaluru
Worked on Deep Learning algorithms for cleaning of bands in hyperspectral images, used google BigQuery for accessing LANDSAT (multispectral) data. Implemented HSID-CNN in tensorflow for denoising hyperspectral images.

Publications

[1] Rishav*,René Schuster*, Ramy Battrawy, Oliver Wasenmüller and Didier Stricker. ResFPN: Residual Skip Connections in Multi-Resolution Feature Pyramid Networks for Accurate Dense Pixel Matching. In *IEEE International Conference on Pattern Recognition (ICPR-2021).*

[2] Rishav*, Ramy Battrawy*,René Schuster, Oliver Wasenmüller and Didier Stricker. DeepLiDARFlow: A Deep Learning Architecture For Scene Flow Estimation Using Monocular Camera and Sparse LiDAR. In *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS-2020).*

Projects

Visual Commonsense Reasoning
Jan'20- May'20 *Advisor: Prof. Surekha Bhanot*
Implemented the baseline version of VCR in PyTorch and used tried a new attention mechanism for the task.

Compiler Construction
Jan'19-May'19 *Advisor: Prof. Vandana Agarwal*
Constructed a compiler for a given language specification in C language, this included the development of lexer, parser, semantic-analyzer, code-generator.

Structural Health Monitoring & Semantic Segmentation
Apr'18-Dec'18
Implemented auto-regressive model for feature extraction and several unsupervised algorithms like one-class SVM for final classification. Integrated a new backbone into segmentation models api for semantic segmentation using Keras. These projects were done at *CEERI-Pilani.*

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.

Relevant Coursework

Computer Science: Data Structures and Algorithms, Design and Analysis of Algorithms, Neural Networks and Fuzzy Logic, Machine Learning, Object Oriented Programming, Pattern Recognition
Mathematics: Linear Algebra, Probability and Statistics, Differential and Integral Calculus.

Software Skills

Languages: C, C++, Java, Python, Javascript, SQL, LaTeX.
Frameworks: Tensorflow, PyTorch, Keras, SpringBoot, ReactJS.

Professional Activities

Head TA, Neural Networks
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.

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

Team Leader, Nirmaan Organisation
Leaded the social project Gyanbodh Harinagar for the stated time, introduced the concept of Activity Based Learning to Kids of the community.

Achievements

- Awarded certificate of excellence by Govt. of India for scoring 99.0/100.0 in Mathematics in High School All-India Exam.
- Obtained a score of 390/450 in BITSAT, test for admission to BITS Pilani, placing me in top 1000 out of 350 thousand students.
- Obtained an all India percentile of 99.90 out of 1.2 million candidates in Joint Entrance Examination (Main).
- Amongst 4,000 people selected for National Talent Search Examination scholarship out of 0.5 million candidates for the year 2014.

References

Prof. Dr. Didier Stricker
Professor at TU Kaiserslautern & Director at Augmented Vision, DFKI
didier.stricker@dfki.de

Prof. Oliver Wasenmüller
Professor at HS-Mannheim
o.wasenmueller@hs-mannheim.de

Prof. Surekha Bhanot
Professor at BITS Pilani
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