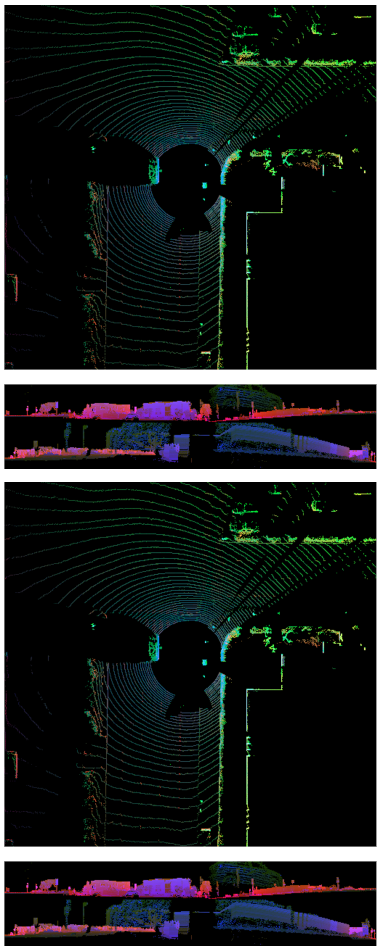
Dominik Fletschinger | Motivational Letter

Motivation

Machine Vision, ML Data driven, Internship at Sick AG - Coming from theoretical side of mechanical --> Tensor algebra, Tensor analysis and optimization, generalize well on Machine Learning and Deep Learning research. At Prof Böhlke who comes from mathematical side of mechanical engineering, I learned rigourous mathematical thinking and how to apply it to real world problems.

- challenge drives me
- ML has high relevance ELLIS, Why Ellis: - ELLIS is a great opportunity to work with the best in the field, to learn from them and to contribute to the field. - ELLIS is international, oppurtunities



Past research

- Perception
- Object Detection
- Self Supervised Learning
- Multi-Modal Fusion
- Frame failure as big learning no paper --> resource adapted research - While not part of the research idea finetuning on pretrained transformers outperformed our method. - Excellent overview of perception and object detection

Future research agenda

- Coming from perception

Line of research NeRF

- Currently following the line of research of nerf [1] pixel nerf, gaussian splatting and mvsplat (technical, perception)

- Self supervised representation learning and pretraining (conceptual) --> Masked modeling for point clouds, voxel grids, and images (technical)
- Curriculum learning in combination with regularizing the learning process (conceptual) with multi task learning (technical)

Student mentoring

- Looking forward Thesis students

Advisors

- Valada and Geiger

References

[1] Ben Mildenhall, Pratul P Srinivasan, Matthew Tancik, Jonathan T Barron, Ravi Ramamoorthi, and Ren Ng. Nerf: Representing scenes as neural radiance fields for view synthesis. *Communications of the ACM*, 65(1):99--106, 2021.