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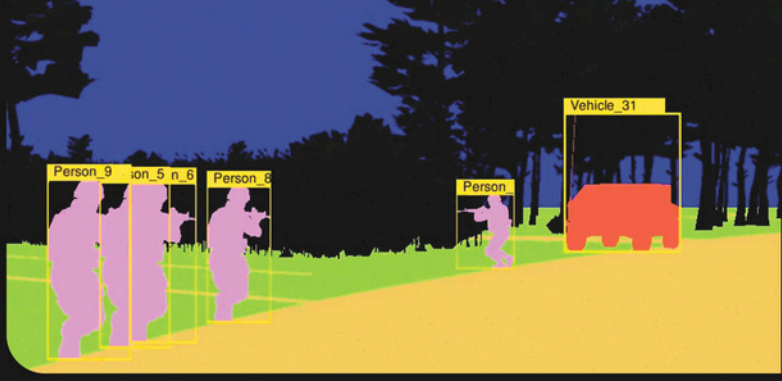
AI



Generated synthetic data with a semantic mask

Research area

- AI-based computer vision for automotive and industrial applications
- Object detection, tracking, and safety monitoring
- AI-powered logistics analytics
- Embodied AI for industrial and military automation

Tools

- PyTorch
- OpenCV
- Python
- AWS

Projects

- **Mobile application for the recognition of automotive clips**
  AI model trained for clip classification with a database containing 259 different car clips.
- **Research on the perception system of an Autonomous Vehicle (AV) in terms of road safety at intersections**
  Evaluating the effectiveness of the AV perception system's obstacle detection.
- **Synthetic data generator**
  Generating synthetic data for machine learning to extend the database with labels or semantic masks, e.g. for AV use cases.

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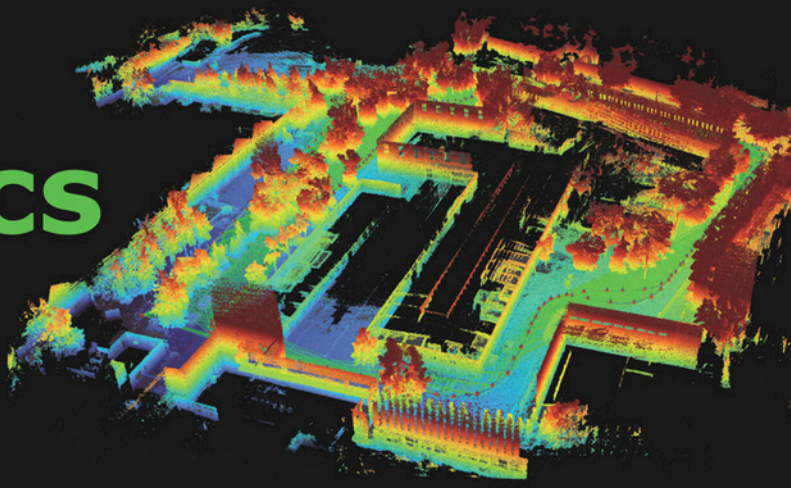
Robotics



Visualization of trajectory on 3D map

Research area

- Vision-based perception system and data fusion
- Decision-making and control systems
- Localization and navigation algorithms for mobile robots
- Simulators with sensor behaviour for various forecasts

Tools

- ROS/ROS2
- C++, C#, Python
- Unity

Projects

- **Development of an Advanced Driver Model for an Autonomous Car-Trailer**
  Unit Advanced driving control system in critical situations involving an Autonomous Car-Trailer Unit.
- **Autonomous platform for operational support**
  Development and construction of an electric Unmanned Ground Vehicle (UGV) with an autonomous obstacle avoidance system.
- **Autonomous transport for intralogistics**
  Autonomous system for Autonomous Mobile Robots (AMRs), including operations around production or storage halls in an outdoor environment.
- **Simulators for Autonomous Robots**
  Simulators for the development and testing of an autonomy system, using the Unity graphical environment.