Delft, The Netherlands
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Alexander Keijzer

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Work Experience

Control Systems Engineer　　　**Fusion Engineering**　　　　　　　　**JUN '22 - CURR**
Delft, The Netherlands

- Designed, implemented, and tested motion planning for a multirotor (drone) flight controller written in Rust.
- Found analytical solutions to equations of motion using SymPy for more general control solutions that depend less on system parameters than techniques like MPC.

Robotics Software Engineering Intern　　　**WAKU Robotics**　　　　　**SEP '21 - FEB '22**
Dresden, Germany

- Created a mobile robot lab for a real-world environment to test WAKU Sense software integration, implemented robot behavior and task logic in Python and control & navigation stack (SLAM, AMCL localization, etc.) using ROS.
- Feature lead on multiple features that shipped to customers, pinned down customer needs with PMs, designed solutions, implemented backend logic in Go & SQL, and pulled in front-end developers where needed.

Control Systems IP　　　**Mercedes-AMG Petronas Formula One Team**　　　**AUG '19 -AUG '20**
Brackley, United Kingdom

- Set up a new time series data analysis tool that expands capabilities to find correlations in system performance measured by 100s of sensors, resulting in a more data-driven development of car control systems.
- Supported the trackside team during the races by analyzing live data and monitoring car systems.
- Expanded on-car control and monitoring systems in Simulink and MATLAB, allowing for more efficient error detection and mitigation while the racecars are on track.

Student Projects

Graduate Research Assistant　　　**Delft University of Technology**　　　**FEB '21 - AUG '21**
Delft, The Netherlands

- Designed and created EAGER, a reinforcement learning framework in Python using ROS to allow researchers to seamlessly switch between physics engines and real-world robots, funded by the EU's Horizon 2020 initiative.
- Created API for researchers to add robot types and support different physics engines.
- Set up automated testing, continuous integration, and documentation building.

Chief Engineer　　　**Formula Student Team Delft**　　　**AUG '17 - AUG '18**
Delft, The Netherlands

- Full-time technical lead of the development of the "DUT18", a full electric 4WD race car.
- Managed a team of 60 engineering students in 7 departments that designed, produced, tested, and raced a Formula Student racecar from scratch.
- Built and analyzed competition simulations, set and tracked performance targets, and integrated vehicle design.
- Raced in three competitions in Europe on a month-long tour, winning Formula Student East.

Education

- **MSc. Robotics,** Delft University of Technology.　　　**SEP '20 - APR '23 (EXP)**
  GPA 8.6/10, Thesis: Inverse Action Entropy for Experience Replay Selection in Deep Reinforcement Learning.
- **BSc. Mechanical Engineering,** Delft University of Technology.　　　**SEP '14- MAY '19**

Courses: planning and decision making (motion planning, trajectory optimization, obstacle avoidance), dynamics and control (kinematic/dynamic modeling), artificial intelligence techniques (Bayesian state estimation), and more.

Technologies and Languages

- Languages:　　Python, Rust, MATLAB, Go, Java, C++, SQL
- Technologies:　　PyTorch, Linux, Git, Jax, ROS, Simulink, Redis, Postgres, CATIA, Protobuf