

# Master's Thesis

## Reinforcement Learning for Cable-Driven Parallel Robots

**Cable-Driven Parallel Robots** can cover large workspaces and belong to the fastest robots on earth. Prominent examples are spider cameras in stadiums. However these robot systems are not only suitable for recording sports events, they can also solve challenging pick and place tasks.

In this thesis, we will study parallel kinematics without fixed connecting struts for stabilization. In our robot the base is attached to wire rope hoists which leads to swinging motions and results in an extremely challenging control problem *that has not been solved till today*. If you want be part of this innovative research and robot development, we can offer you a well structured thesis plan that allows you to work with powerful robots and state-of-the-art reinforcement and model learning methods.

### Tasks

You will work with our innovative laboratory prototype robot and will evaluate state-of-art reinforcement learning methods and reward functions. The resulting optimized control strategy will be used for fast point to point motions in the parallel robot prototype.

### Qualification

- Interest and basic knowledge in robotics, kinematics and artificial intelligence.
- Programming skills (Python, Matlab)

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