



Prof. R. Wattenhofer

## Safe Reinforcement Learning with Drones

Reinforcement learning tries to mimic the way humans learn. For example, when you touch a hot stove you will feel pain and not do it again; nobody needs to tell you that what you did was stupid. However, as this example shows, one cannot carelessly explore the entire action space without running the danger of getting severely injured; A pilot cannot learn to fly by first crashing into some mountains.

Similarly, one does not want to risk expensive equipment just to teach a drone how to fly a loop. One could also use a simulation, but this requires knowledge about the dynamics of the drone; this knowledge might be incomplete or faulty, leading to an unrealistic simulation. One could however try to combine simulation and real-world execution. In this project we want to teach a drone certain maneuvers using reinforcement learning, while making sure the drone does not settle on policies that will lead to dangerous behaviour. If this sounds interesting to you, do not hesitate to contact us.



**Requirements:** Knowledge in Machine and maybe Deep Learning. Programming Skills.

**Interested? Please contact us for more details!**

### Contacts

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