

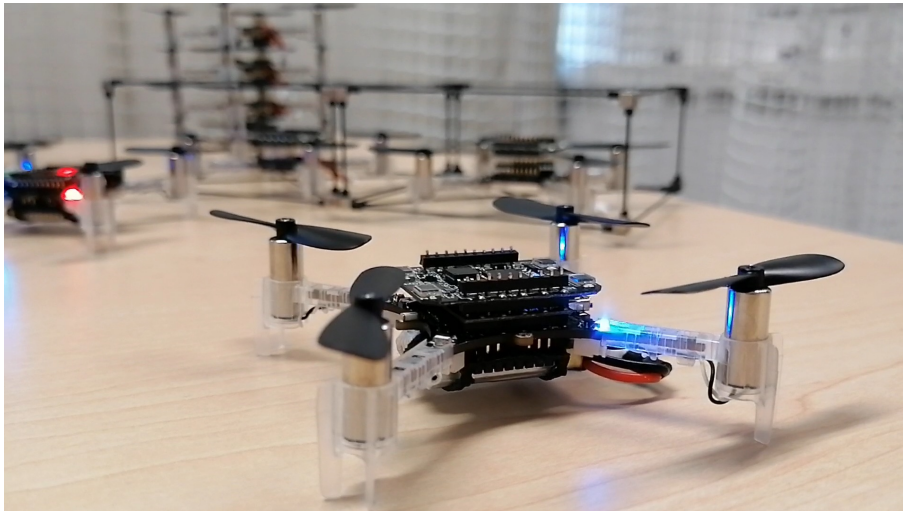


## Thesis (B.Sc. / M.Sc.) Active Learning for Online System Identification

Drone swarms offer many possibilities for applications such as transportation, disaster relief operations, environmental exploration or ad-hoc communication networks. An important prerequisite to the application of drone swarms is a reliable control algorithm.

The typical approach to achieving control on dynamical systems such as drones is to first perform system identification and obtain a model of the drone dynamics that allow for precise simulation and prediction of controlled drone behavior.

Unfortunately, in certain scenarios it may be impossible to know the exact parameters of the dynamical system beforehand, e.g. when lifting an unknown piece of rubble from the ground. In that case, one may wish to perform online system identification or adaptive control while the drone is flying.



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At BCS Lab's Dronelab, you will have the opportunity to work with Crazyflie 2.1 drones. You will investigate how to apply active learning techniques to online system identification on the Crazyflie drone, ideally aiming at a publication in relevant venues. You are further encouraged to realize your own ideas.

Some of the following may or may not help:

- Knowledge of control theory / system identification
- Experience with embedded systems or C

For further information, please contact Kai Cui.