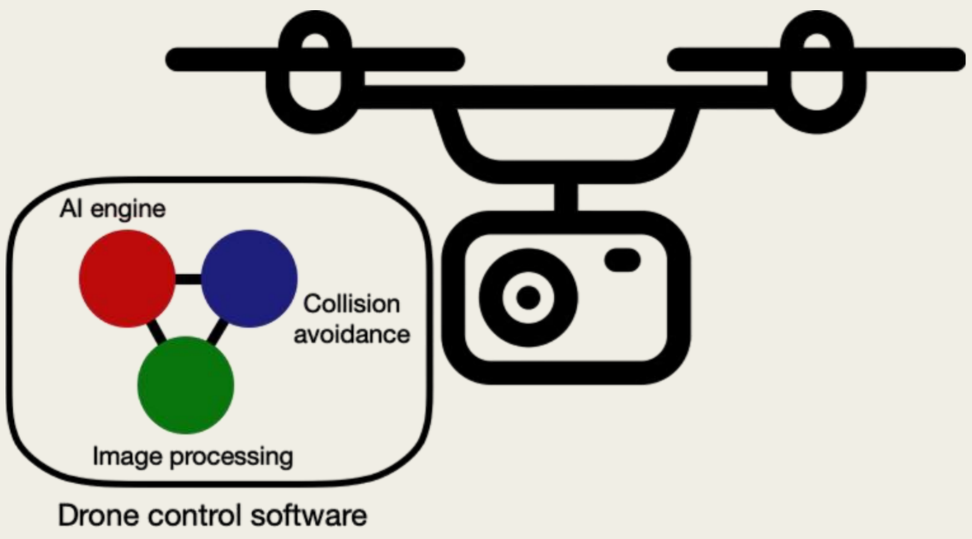
Control Offloading for UAVs

EMIL SUNDSTRÖM – DEPARTMENT OF AUTOMATIC CONTROL, LUND UNIVERSITY

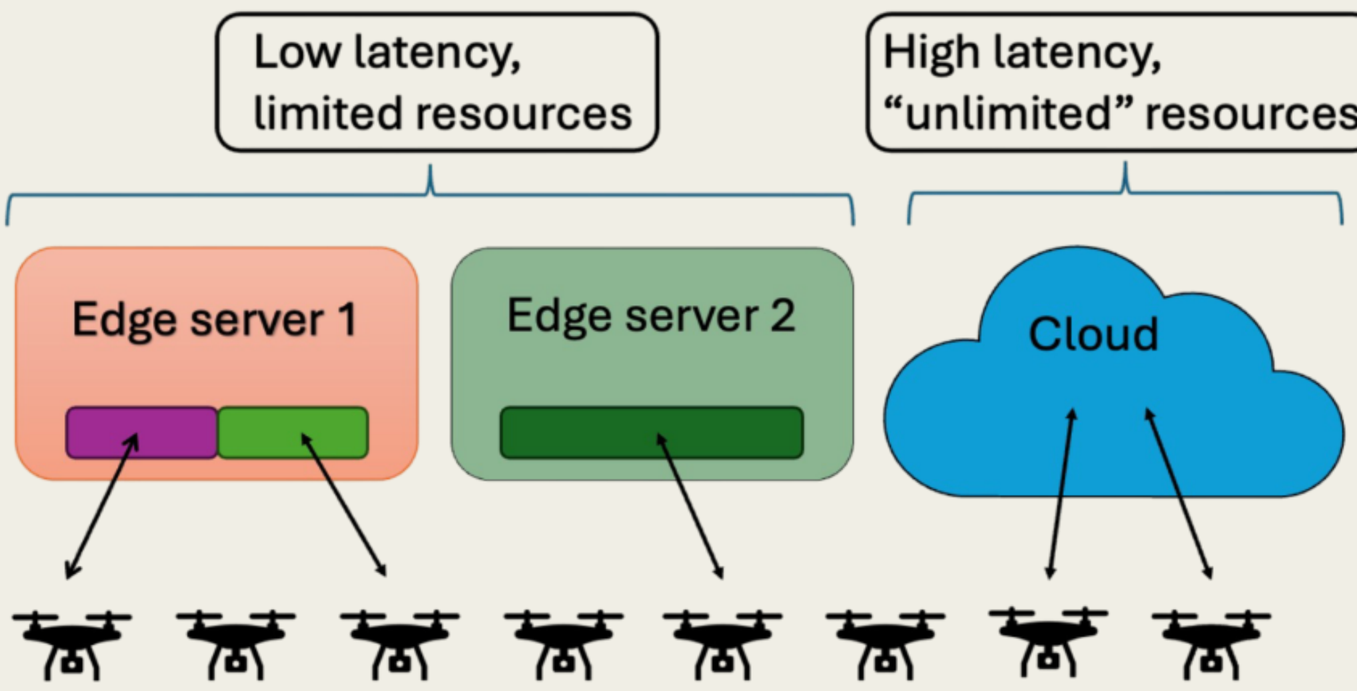
Introduction to the problem

Dynamically offloading computationally heavy control algorithms to an external data centre comes with numerous challenges, one of which is the resource allocation task. With limited external computation capacity, poor resource management will lead to a decreased system performance. Therefore, my research focuses on how game theoretical approaches can be used to solve the resource allocation problem involving multiple devices within a constrained area.

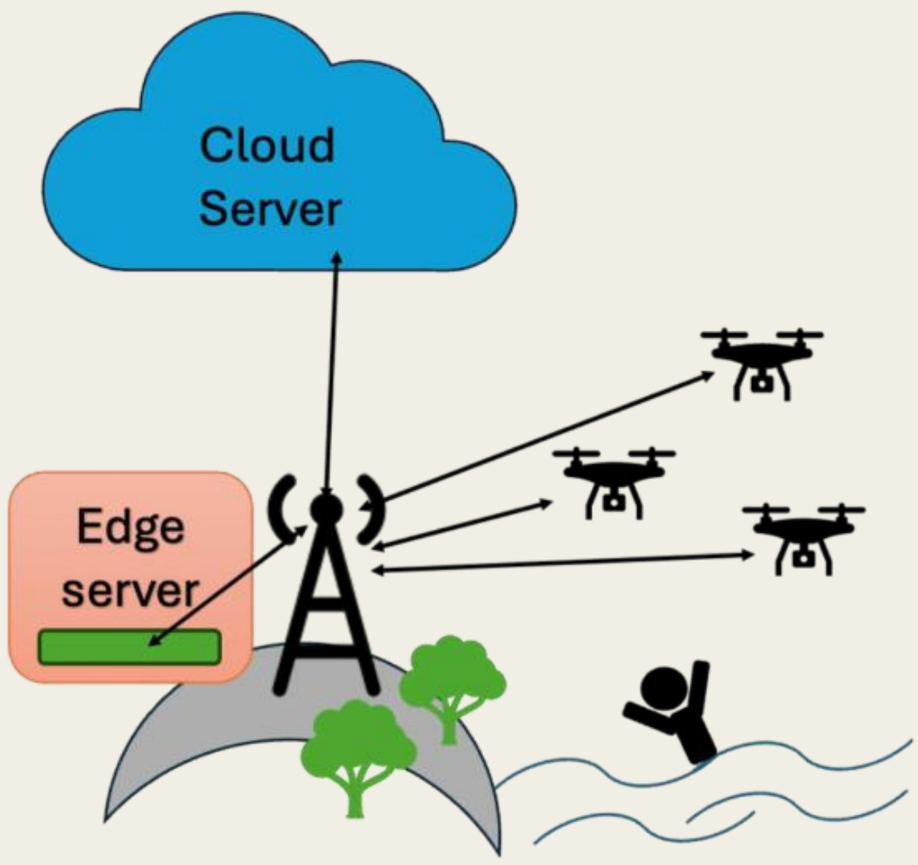
Computationally heavy tasks, and limited resources onboard



Who offloads, and to which server?



Search and rescue scenarios



Using game theoretical methods to solve the problem

- A UAV can compute locally, offload to an edge server, or offload to the cloud.

- Let the UAV:s be agents, competing for resources in edge/cloud.

$$(V, \{A_i\}_{i \in V}, \{u_i\}_{i \in V})$$

- Decision to offload or not is based on latency, energy and economics.

Contact

Emil Sundström, Department of Automatic Control, Lund University
emil.sundstrom@control.lth.se

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