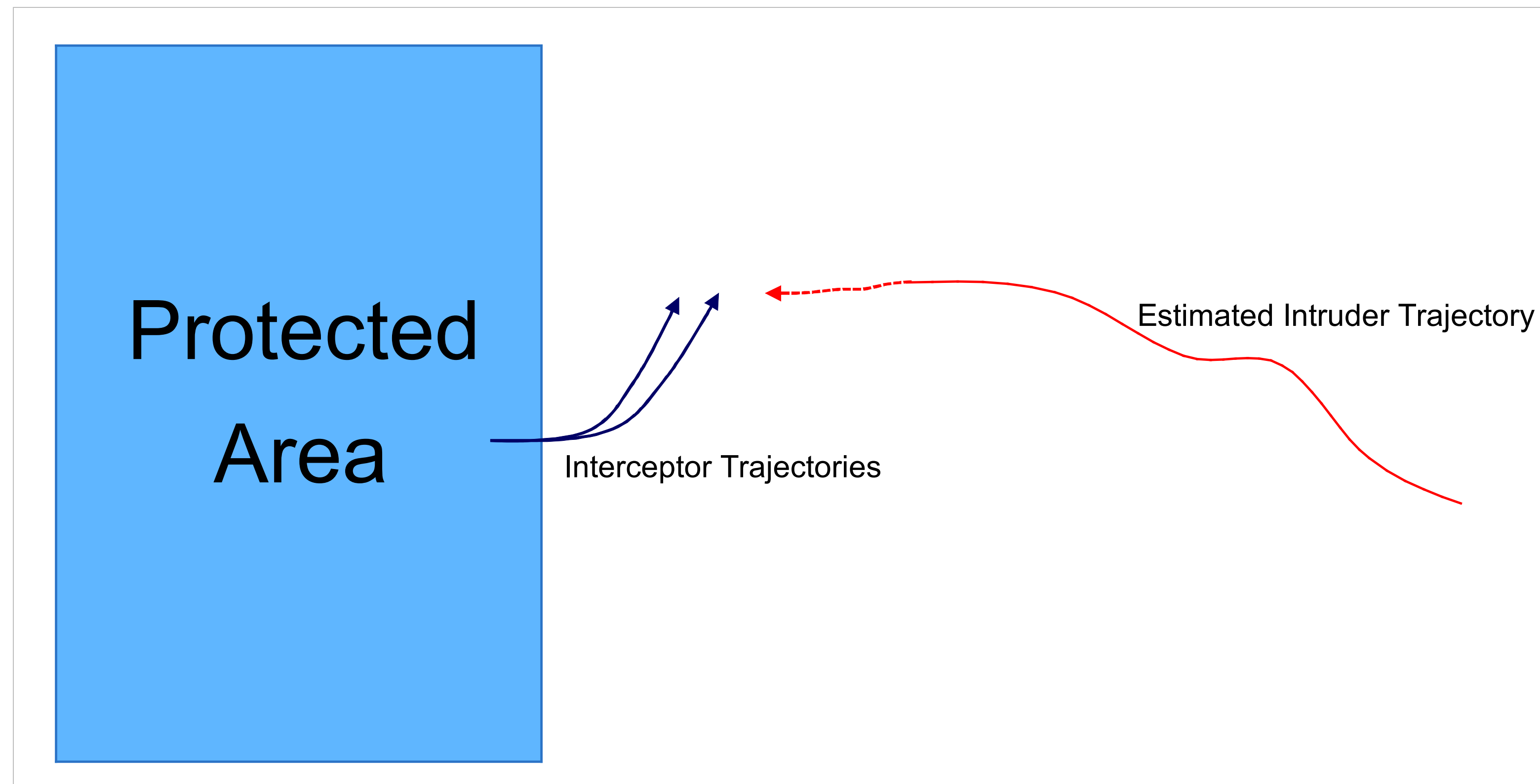


Optimal Trajectory Generation for Small Drones Used as Micro Interceptors



Naval
Postgraduate
School



- To formulate the optimal trajectory generation of the interceptor drones as an optimal control problem.
- To map interception scenarios into boundary conditions for the optimal control problem.
- To conduct the investigation in phases, from modeling of interceptor drones and intruder drones, to theoretical analysis of the optimal trajectory generation, to simulation of various interception scenarios, and to experimental validation of the concept with selected models of drones.

- To investigate the concept of micro interceptors, that is, to deploy interceptor drones to prevent intruder drones from entering protected areas.
- To plan and generate optimal flying trajectories for the interceptor drones, in order to minimize the energy consumption.
- To optimally extend the flying endurance of the interceptor drones.
- To examine the interception effectiveness of the micro interceptor strategy.
- To study the design requirements for small drones to be used for the interception purpose.

- With the increased use of small drones for commercial and recreational applications in the recent years, the incidents of small drones entering protected areas have risen dramatically.
- There is an urgent need for developing effective means to intercept intruder drones.
- Compared to ground-based interception strategies, the micro interceptor concept offers a promising alternative that warrants consideration.