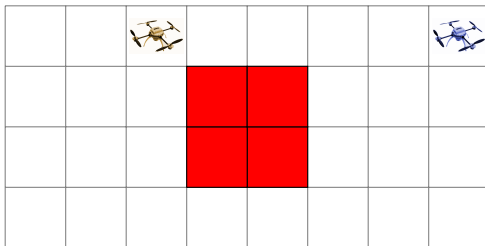


# Synthesis of surveillance strategies [submitted to ICRA'18]

S. Bharadwaj, R. Dimitrova, and U. Topcu

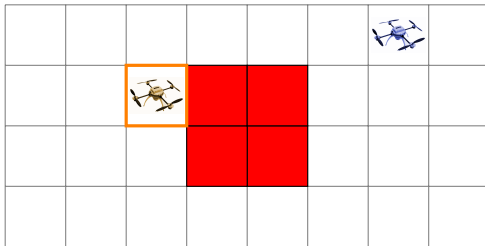
Temporal evolution of uncertainty as a synthesis objective



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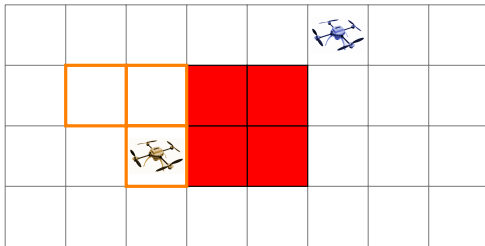
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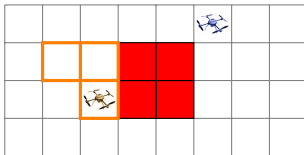
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# Types of surveillance objectives



- ▶ **Safety:** critical surveillance requirements

The agent must keep its uncertainty about the target's position contained below a specified threshold at all times.

- ▶ **Liveness:** persistent monitoring requirements

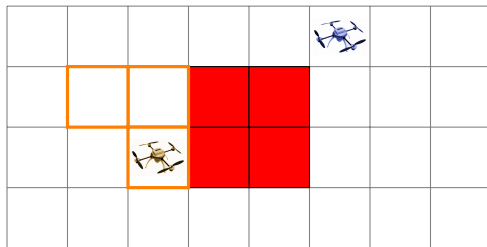
The agent can allow the uncertainty about the target's position to grow, as long as it can guarantee reducing the uncertainty below a threshold at a future time.

Combination of such requirements tailored to suit the mission

# Synthesis of surveillance strategies [submitted to ICRA'18]

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Temporal evolution of uncertainty as a synthesis objective



**Challenge:** Exponential size of the set of uncertainty sets

**Approach:** Abstraction-based surveillance strategy synthesis

## Safety surveillance objectives

Surveillance : the uncertainty should never grow above 10 cells

Task specification: visit the goal location infinitely often

## Liveness surveillance objectives

**Surveillance** : infinitely often know precisely the target's location

**Task specification**: visit the goal location infinitely often