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Formal Analysis of Search-and-Rescue Scenarios

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Abstract

This document presents a formal model of search-and-rescue scenarios featuring drones, civilians, and first-responders. The scenario analyzed involves a fire outbreak inside a building, modeled using a network of timed automata within the UPPAAL tool. A fleet of drones is deployed on the scene to instruct human subjects to assist those in need or request intervention from a first-responder. The model then undergoes formal verification to ensure correctness, and the drones' decision-making policy is formally checked to guarantee that survivors can reach safety.

High Level Model Description

Component Description

Design Choices

Properties

Conclusion