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Multi-robot autonomous operations with a single controller

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One of the challenges faced by robot manufacturers, customers, and operators is how a single operator may successfully operate two or more robots accomplishing autonomous or semi-automous tasks. The problem is to keep the operator workload below the threshold of task saturation, when in the face of multiple alarms, notices, and decisions. For example, if a fire has broken out, the security officer operating a series of robots is faced with evacuating the building, locating the fire, possibly performing counter measures, and then coordinating with first responders. At Gamma 2 Robotics, we are investigating and researching robot operations modalities to address how our robots can best respond to critical situations efficiently. Our research is based on previous work done in operator workload for the US Army and other militaries, who have the most experience using robotics in critical situations, such as responding to IED's or roadside bombs. We will present our approach to robot autonomy and how we utilitzed research and engineering practices to decide which autonomous features to include and which to leave out. The final part of the paper is a discussion on testing and certifying multiple robot systems for safety and operational release.

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Notes:

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