

**Nick Halabi, Scott Tipton**  
**Undergraduate Senior Capstone Project**  
**Multi Robot Navigation and Mapping for Combat Environment**  
**Department of Electrical Engineering**  
**Faculty Mentor: Dr. Aleksander Malinowski**

The Multi Robot Navigation and Mapping for Combat Environment project will safely enable a robot to navigate through an indoor or outdoor (urban) combat environment. The idea behind this project is that a relatively inexpensive/expendable robot would first scan an unknown area and relay a map of the area back to central command. Central command would then use that map for safe navigation of a more expensive/comprehensive robot. The first robot will be in charge of mapping the environment and designating a safe route that can be navigated by a second robot while avoiding any obstacles or dangers. The second robot will then use the map generated by the first robot and use a path finding algorithm to determine the best path through the environment that avoids all obstacles and threats. The overall goal of this project is to guide autonomous supply caravans or troops safely through a combat zone.