

# Model-Driven Synthesis of Embedded Robotic Navigation Systems

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## Abstract

Real-time embedded systems are time-sensitive systems that are hard to implement as compared to traditional commercial software due to their large number of conflicting requirements. This presentation describes our investigation into the use of advanced modeling techniques to improve the development of embedded systems. In particular, we have developed domain-specific models that describe the layout of a “hostile” environment (e.g., symbolically represented as an area infected with land-mines, or a disaster site where it is too dangerous for humans to search for survivors). From these visual model specifications, model interpreters generate the embedded code that will be downloaded into LEGO MindStorms robots. The code that is generated will assist multiple robots in maneuvering around the dangerous obstacles to rescue valuable assets (e.g., . The modeling environment and associated tools will be discussed in addition to the planning algorithm that generates the synergistic code for controlling multiple robots.

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