Overview
Our goal is to develop adaptive AI opponents for real-time strategy games based on expert knowledge. We use a reactive planning framework to partition the problem space into domains of competence seen in expert play.

Contact Info
Ben Weber (bweber@soe.ucsc.edu)
Josh McCoy (mccoyjo@soe.ucsc.edu)

Reactive Planning Agent
We developed a real-time strategy agent that integrates multiple specialist components to play a complete game. Based on an analysis of how skilled human players conceptualize RTS gameplay, we partition the problem space into domains of competence seen in expert human play. This partitioning helps us to manage and take advantage of the large amount of sophisticated domain knowledge developed by human players.

Learning from Expert Gameplay
We are currently investigating approaches to automatically learn gameplay from expert traces. Initially, we applied case-based reasoning to build order in a real-time strategy game, which alleviates humans from needing to specify build orders in the agent. Our current work focuses on a data mining approach to opponent modeling. We are using machine learning algorithms to perform strategy recognition and predict when an opponent will perform actions.

Framework
Our agent is composed of the following components:
• Strategy Manager (SM): high-level strategic decisions
• Production Manager (PM): units production
• Income Manager (IM): worker utilization
• Tactics Manager (TM): small scale combat
• Reconnaissance Manager (RM): handles scouting

Publications