

Planning in SimCity

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Building a planner to work within the domain of the software game SimCity presents a number of challenges to memory-based planning. Success in SimCity requires maintaining the well-being of the city over a long period of time, developing and improving the living conditions of neighborhoods, and swiftly responding to emergencies such as earthquakes and floods. The planner should have the flexibility to support many goals at once, switching between actions in service of long-range planning agendas to local, immediate problems. The finite resources of money and time in the game emphasize the need to integrate a theory of attention with memory-based planning. It is critical to consider not only how to come up with good plans, but how much time we have to come up with them.

Our initial efforts are directed towards organizing the knowledge that is needed to manage a city. Our approach is to segment the knowledge required to handle different levels of goals, ranging from the lowest requiring little global knowledge, like trying to contain a fire in an industrial complex, to higher, knowledge-intensive decisions, such as when and where to build a new airport. We are building a planner which is composed of a hierarchy of routines dedicated to monitoring and responding to certain conditions in the world. They each possess the knowledge required to make a certain set of decisions, and may communicate their plan intentions to both subordinates and superiors. Throughout the hierarchy, superior routines will administer resources and approve plans, while subordinate routines will build simple plans, and fill in the details of executing more complex plans in the world.

The construction of a system that arbitrates, at many levels, between plans demanding the same resources should provide insight into building real-time memory-based planners.