TJ Hallway Simulation
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Introduction

The people-trac in the hallways at TJ is erratic. Some hallways are jam-packed between periods, during lunch, and before school. Others are deserted, save for three or four students standing in an alcove talking. My intention is to model the traffic of people, both students and faculty, during the school day. Each agent would have social factors coded into it which may change based on interactions with other agents. My program will be easily scalable and changeable in that it will be easy to change the layout of a school and alter numbers of all types of agents. Because the decisions are generated dynamically, the agents will adapt to whatever environment they are generated in.

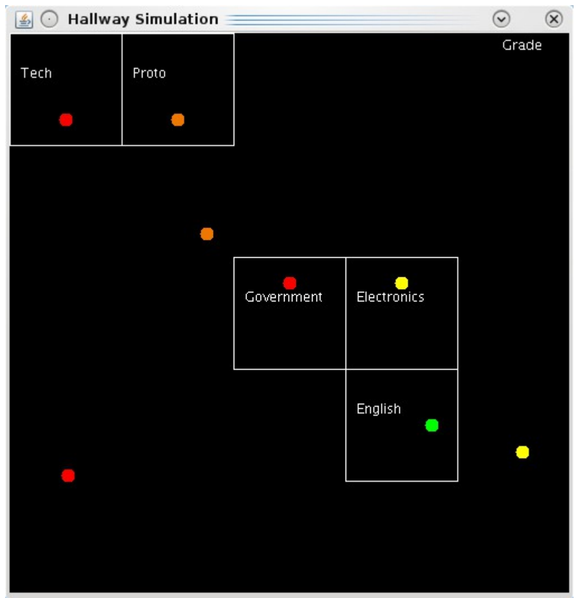

Fig 2: Students in rooms with the “grade” filter enabled

Abstract

Agent-based models are effective methods for accurately simulating virtually any scenario. Simulations are time-, effort-, and cost-effective ways to predict how agents (in this model, students) react to other agents and whatever the current scenario is.

Use and Expected Results

This (preferably) comprehensive simulation would have several uses. In light of the expected renovations to TJ, my model could be used to design a hallway and classroom layout which would minimize bottlenecking of hallways. With a well-developed frame-work, people interested in my project could easily extend it in the future.

These qualitative results would provide an interesting insight into what causes the build-ups of people in certain hallways and intersections. Ideally, the program would be lag-less and perfectly model several hundred agents' movement around the school. The agents would also adapt to changes in the environment such as drops or surges in the number of other people or even an entirely new layout to the building.

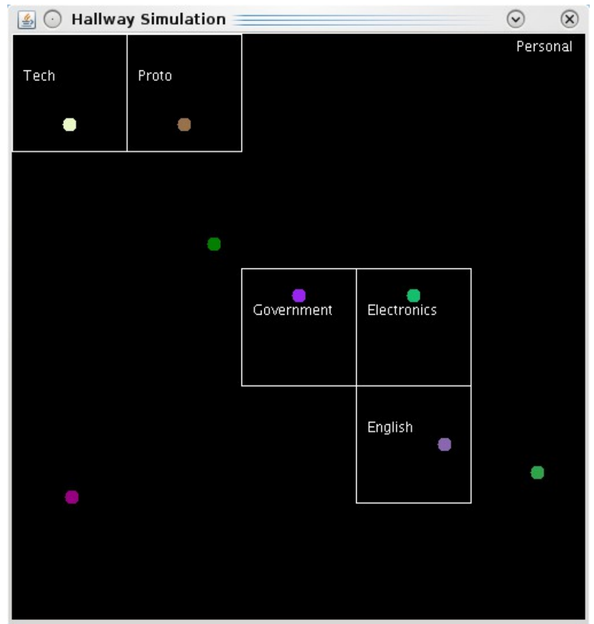

Fig 1: basic interface with some students in classrooms

Discussion

I found one helpful article on portal.acm.org, which related to a study of social dynamics within a virtual ecosystem. It discussed a mathematical algorithm for assigning a numerical value to the compatibility between two agents. I found this numerical assignment interesting it started me thinking about a scale-based personality method rather than a numerically-unrelated system.

There have been several tech-lab projects on the same general topic in the past. Paul Wood's simulation was also modeled after TJ's hallway traffic, but his simulation was focused on whether or not students were able to make it to their classes on time rather than how social factors affected the congregation
areas.