

What exactly is IPRO 317 about?

IPRO 317 is a group of college students from different disciplines set out on completing a model of downtown Chicago. The purpose of this model is for training personnel of the Chicago Fire Department in large scale disasters in high density areas.

By taking the diverse backgrounds of the team members, IPRO 317 was able to research, experiment, and implement improvements in the model that will make this model the ideal information tool.

Currently, IPRO 317 has completed fabricating all the buildings for the model. Improved information displays by using individual LEDs for buildings and integrating it with a projector below the projector. New methods of making models parts were experimented to help complete the remaining five parts of downtown. A contract with the Chicago Fire Department is currently pending final approval which will help future semesters in obtaining the resources needed to complete the model.

In the future, the remaining electrical components for the model will be obtained. Using the software coded this semester the first section can be completed and work on the remaining models is well within reach.



IPRO 317

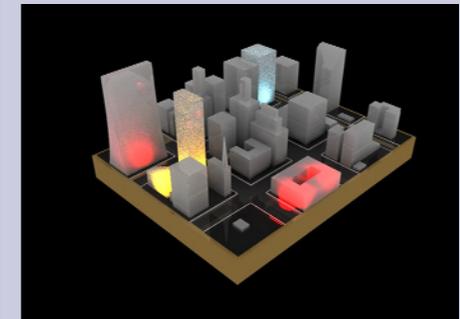
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IPRO 317

Design & Build Chicago Scale Model for Dynamic Disaster Simulation





What is a model of dynamic disaster simulation?



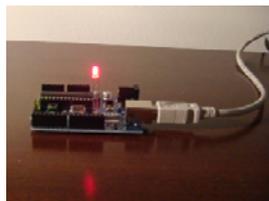
The Chicago Fire Department is the nation's leading fire department in terms of disaster preparedness and event forecasting. To help them a scale model of downtown Chicago will serve as a very useful tool in a growing collection of advanced technology employed by the department. This model would be a very understandable means to communicate and decipher a complex system of multiple emergency services and protocols that occur simultaneously during a disaster. This semester was focused on the models ability to display information and the completion of the first of six portions of Downtown Chicago.

Research

Completion of the model required integration of different technologies. For the building models, acrylic adhesives had to be tested for strength and still allow for proper illumination. Previous work on the fabrication of the buildings would take five to ten man-hours per building, but with experimentation into resins the ability to create lighter, cheaper, and quicker creations were possible. To



Testing the light transparency of a resin test sample.



A Light Emitting Diode (LED) attached to a computer controlled circuit board.

help convey information about buildings, research and test models of wireless LED circuit boards were successfully completed.

Implementation

The integration of the new technology into the model from last semester required working with more than 150 pieces of acrylic buildings. Buildings were individually sandblasted to improve the light display. The wireless LED circuit boards had to be individually programmed because of the unique landscape of each city block. Street information of the model is conveyed by a projector underneath. All three of these aspects work cohesively to display a disaster scenario and the emergency plan in real time.

