

CENG 477 Preproposal

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Project Topics:

1. An Intelligent and Learning System for turn-based games

Sponsor: SNG

Description: In turn based games, the game artificial intelligence (AI) is able to compensate for its lack of game reasoning by evaluating board positions millions of times faster than the human player. However, search-based methods consume too many resources. We propose a system that can learn to play by observing the human players. Our main purpose is to model human players (in the same level) by using learning methods. By this way, the AI agents can replace human players in different levels. Our agents do not aim to be the best player. They only try to imitate the humans in different levels. Our learning system will collect data from turn-based games in internet. We will choose at least two turn-based popular games and develop these games for facebook users. The learning module will be integrated into this system. The proceeding of the project will be followed by the

SNG with the meetings per two-week periods.

2. Greenhouse Monitoring using Wireless Sensor Network

Sponsor: INNOVA

Description: The most important factors for the quality and productivity of plant growth are temperature, humidity, light and the level of the carbon dioxide. Continuous monitoring of these environmental variables gives information to the grower to better understand, how each factor affects growth and how to manage maximal crop productiveness. The optimal greenhouse climate adjustment can enable us to improve productivity and to achieve remarkable energy savings - especially during the winter. In modern greenhouses, several measurement points are required to trace down the local climate parameters in different parts of the big greenhouse to make the automation system work properly. Conventional monitoring systems using cabling would make the measurement system expensive and vulnerable. Moreover, the cabled measurement points are difficult to relocate once they are installed. Thus, a Wireless Sensor Network (WSN) consisting of small-size wireless sensor nodes equipped with radio and one or several sensors, is an attractive and cost efficient option to build the required greenhouse measurement system. In this project, a prototype greenhouse monitoring system will be implemented using wireless sensor networks. Pre-programmed sensor nodes will be placed in several points of a greenhouse. These sensors will periodically measure the temperature, light and humidity levels inside the greenhouse and send this information to the main server in a remote control center. When a critical change in the temperature, humidity or light level is detected, the greenhouse manager will be notified via e-mail or cell phone text message, or host systems can trigger misting systems, open vents, turn on fans,

or control a wide variety of system responses. This project requires the programming of sensor nodes using a special programming language named nesC. For this, Crossbow's IRIS Mica sensor nodes in the Informatics Institute's Wireless Lab will be used. In addition, a web application is required to be developed which will get the measurement data from the gateway node and will synthesize this data into useful information for controlling the climate parameters and making necessary notifications. Lastly, this project involves some wireless networking effort to appropriately locate the sensor nodes for ensuring a good quality communication.

3. SNMP Agent & Network Simulator

Sponsor: SIEMENS

- Simulation of SNMP Agents (both snmp response & snmp trap) and Network

- Simultaneous multiple MIB simulation

- Simultaneous multiple trap simulation

- Simultaneous multiple IP node simulation (Layer2 & Layer3)

- PDV (Packet Delay Variance), packet loss, packet delay effect simulation

- Makes it possible to create big network like environments without investment on hardware.

Benefits

Better testing of HiPath Fault Management and other network management applications.

Decrease of testing time, since it takes considerable amount of time to prepare a convenient testing environment.