Announcing the Final Examination of Mohammed Basingab for the degree of Doctor of Philosophy

Time & Location: October 31, 2017 at 10:00 AM in ENG2 312L
Title: A FRAMEWORK FOR INTERNET OF THINGS BUSINESS MODELING AND ANALYSIS USING AGENT-BASED SIMULATION

Internet of Things (IoT) is a vision of an integrated network covering physical objects that are able to collect and exchange data. It allows previously unconnected devices and appliances to become connected through equipping devices with communication technology such as sensors and radio frequency identification tags (RFID). As technology progresses towards new paradigm such as IoT, there is a need for a reliable method to identify the value of these ventures. Traditional simulation methods and data analysis techniques cannot capture the system complexity inherent or suffer from a lack of data that help to build a prediction. Agent-based model (ABM) presents an efficient simulation method to model these complexities and offer a solution.

Two case studies were proposed in this research. The first one introduces a conceptual study of business modeling of IoT using agent-based simulations in order to determine its adoption and life cycle. The paradigm of agent-based simulation is utilized to verify the effectiveness of the business model and simulate the behavior of the market in Orlando city. This case study concentrates in a predictive maintenance business model that uses IoT as the core of the business. The physical components of the systems are connected to sensors and RFID tags to collect data that is stored in a cloud-based system. The simulated time includes two years in order to see the potential of this business model and its feasibility. The second case study is addressed to evaluate the return on investment (ROI) of installing sensors to monitor the condition of refrigerators in Panda, one of the important organizations in the retail sector in Saudi Arabia. ABM is developed to simulate Panda’s refrigerators behaviors and determine how returns can be achieved.

Major: Industrial Engineering

Educational Career:
Bachelor's of Industrial Engineering, BA, 2009, King Abdulaziz University
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Approved for distribution by Luis Rabelo, Committee Chair, on October 16, 2017.

The public is welcome to attend.