EM Thesis Research Showcases

Speakers

Hoda El Halabi

Title: Powerful Algorithms for Queueing Simulation (PAQS)
Abstract*:* Queueing theory models have been widely used in several industries, such as manufacturing, transportation, telecommunication, etc., in order to build high-performance systems that respond to customer's demand in a reasonable time and cost-efficient manner. This research project addresses basic aspect of Queueing analysis related to simple single-node systems, where customers arrive to a multi-server system according to a known distribution, wait in line, if needed, get served based on another well-determined distribution in a first-come, first-served manner, and then depart the system. Our proposed PAQS software aims to implement efficient and effective algorithms for simulating single node queues. PAQS is sought to utilize state-of-art technique for generating the arrival and service time varieties and determining the run length necessary for an accurate output. We work on improving the efficiency of the simulation for multi-server system via a fast sorting technique.

Mario Karam

Title: An integrated single-vendor multi-buyer production inventory model based on the consignment stock case with cross-shipments between buyers
Abstract: Vendor managed inventory (VMI) is an approach used by several companies to monitor and control stocks of products. In this paper, we investigate how the Consignment Stock (CS), a particular VMI policy, may exemplify a successful strategy for both buyers and supplier. CS suppresses the vendor's inventory and uses the buyers' warehouses to stock its products. This paper considers the problem of one vendor with multiple buyers collaborating under VMI with a consignment stock policy with the possibility of cross-shipments between buyers and considering the inventory and shipment storage capacities. We consider transshipment between buyers as a tool to decrease the total cost faced by the vendor and buyers. Numerical results are also presented to illustrate it and discuss its importance. The cost function is shown to be jointly convex in the shipment sizes between the vendors and between the supplier and the vendors. The number of shipments between suppliers and vendors can then be found via a proposed genetic algorithm.

Zahi Hilal

Abstract: While Lebanon suffers from deteriorating economic, social and environmental figures, government, private sectors, and universities, are embracing entrepreneurship as a mean to fix several ends, from unemployment and slow growth to social inequality and pollution. Healthcare entrepreneurship is a particular vertical which presents unique challenges as well as high potentials opportunities given the presence of several underutilized resources in Lebanon. This research identifies frameworks and processes to develop a sustainable infrastructure for a healthcare-oriented entrepreneurial cluster in Beirut. This infrastructure is based on diverse principles and Ideals such as the Entrepreneurial University, the Triple Helix model, Isenberg's Entrepreneurial

Ecosystem and frameworks for university induced high growth ventures. Moreover, this research investigates how these principles can be applied within healthcare ecosystem constituents and identifies the unique constraints that inhibit open innovation with the environments of each of the healthcare sector's verticals.