Australian Government
Department of Defence
Defence Science and Technology Organisation

THE UNIVERSITY OF ADELAIDE AUSTRALIA

$30,000 Sponsored Masters Scholarship
through the
Graduate Industry Linked Entrepreneurial Scheme – GILES

G03/08 – DISCAM – Defence Supply Chain Analysis Model

Objective of Project

Continue building the DISCAM software tool which implements a Mathematical formalism for an arbitrary polytree supply chain network. Currently under development are algorithms for determining node capacities and inventory policies. The model allows building a network of nodes of any configuration with any probability distributions for the demand quantity, time between demands, and lead times (i.e., for three stochastic processes occurring simultaneously). The tool would be capable of determining the desirable probability of meeting the demand from inventory for each node in the network.

Project Specification and Timetable

The rigorous mathematical models that are being developed use convolutions to determine the probability distributions for various aspects of the demand/supply problem and these models are to be implemented into the DISCAM tool, tested and validated.

The algorithms are to be implemented using the Java programming language with the code designed to efficiently use computer memory and minimise computation time. This will involve profiling and analysing the performance of the software. Changes to the existing DISCAM code are to be commented appropriately, bugs recorded and tracked. The code is to be tested and validated using a set of predefined test cases.

Personal Requirements

- Highly developed skills in Math
- Strong analytical skills, interest and ability in learning, understanding and solving complex Mathematical problems
- Interest in Probability/Statistics
- Interest in good software design and scientific programming
- Able to work closely with the mathematical model designer

Academic Qualifications

- Analytical science (such as physics, mathematics, operations research, statistics, economics, finance)
- Software Design and Development
- Scientific Programming
- Applications Programming in JAVA

Other Requirements

- Experience in JAVA Programming
- Experience in MATLAB or other computer added algebra applications is desirable
- Student will be required to undergo a Restricted clearance

Division and Contact Person

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