Towards Effective Adoption of Security Practices
Shams Al-Amin
Overall Research Goals

- Software bugs and defects can increase the cost of software projects significantly.

- The use of security analysis tools may find bugs and defects cheaper or faster than manual inspections.

- The overall goal of the project is to develop a simulation model to improve understanding of the adoption of security analysis tools in software developments.
Specific Research Goals

- Develop a decision model to capture the dynamic decision making of developers, working on a set of tasks that fulfill the goals of a software project.

- Develop a sanction model for managers to explore the influence of sanctions on adoption of security analysis tools.

- Simulate developers of heterogeneous skills in alternative organizational structures under sanction mechanisms.
Model Description

The multiagent system contains three components

- **T** is a set of tasks in a project
- **A** is a set of developer agents who perform tasks
  - A developer can code, run security tests, learn to code or run security tests, or do other tasks not related to project
  - A developer only receives reward for coding or testing
- **M** is a manager who assigns tasks and sanctions
  - Sanctions after each project completion based on functionality, or security
  - Change in developer's preference of action according to sanction
  - Individual or group sanctions
Agenda

- Journal of Simulation Modelling Practice and Theory
- For this review:
  - Abstract
  - Introduction
  - Security practices adoption model