## Temasek Defence Systems Institute

Contact: tdsbox2@nus.edu.sg

## Using Neural Networks to Determine a Course of Action for a Land-based Constructive Simulation

Lian Weiwen, Mervyn, ST Engineering Christian J. Darken

**Objectives:** 

 Train a neural network that can manoeuvre forces on a battlefield

TDSI

**Temasek Defence Systems Institute** 

 Train the neural network to consolidate forces before engaging an enemy as an emergent behavior Results and Findings:

- Eight networks were trained successfully
- Reward function played a crucial role in training the neural network.



Main Research Ideas:

- Using reinforcement learning to train a neural network to manoeuvre forces in a stochastic simulation
- Using range rings as input to each neural network to decide where to move based on enemy position and allies' position



## Benefits/potential applications of research:

- AI that can play as the Red Forces in a constructive simulation to train commanders
- Serve as a decision recommendation and support tool

## Follow-up research

 Convert the simulation to a nonstochastic combat model

