



# **Dissertation Title:** **Neural Network Development for Socio-ecological Modelling of Conservation Conflict**

**Author: SeyedPouria Modaresi**

**Student Number: 2644995**

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# Motivation

- Agricultural activities are one of the key reasons for loss of biodiversity as it has a reciprocal relationship with climate change. This project will look into such agricultural practices in terms of land-use issues using a structured dataset generated through a simulated game.








# Project Objectives

## This project has two objectives:

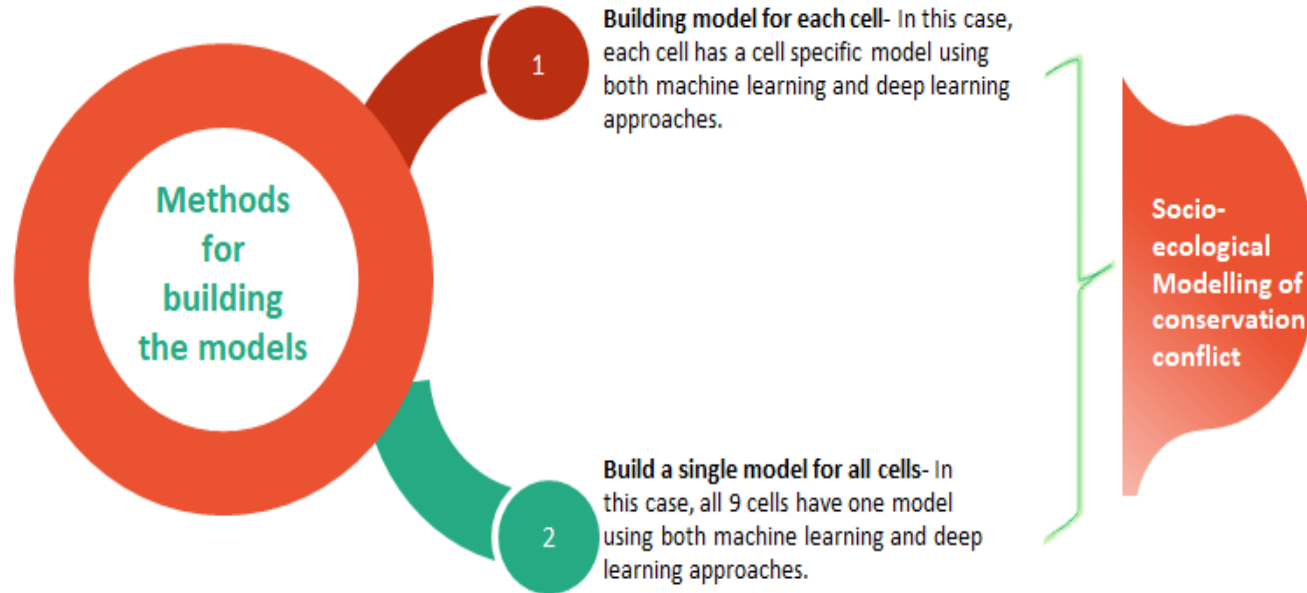
- Firstly, to generate an AI to replicate the decision-making of a game player (i.e. a farmer).
- Secondly, predicting the behaviour of a typical farmer.

*Consequently, agricultural policies for optimum land-use can be adjusted based on farmer's behaviour and ultimately protecting environmental biodiversity.*

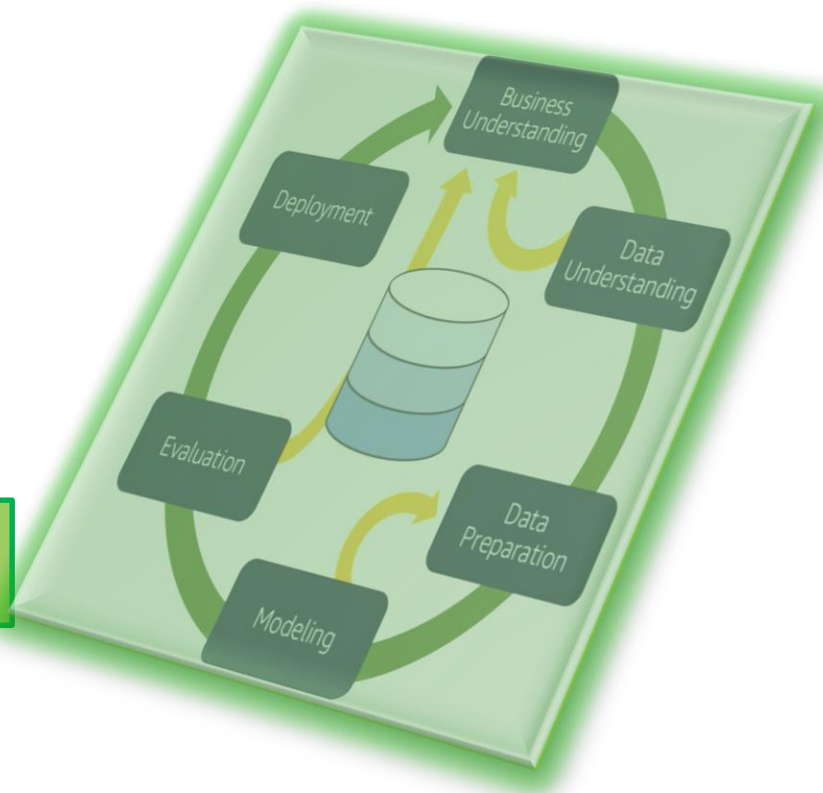
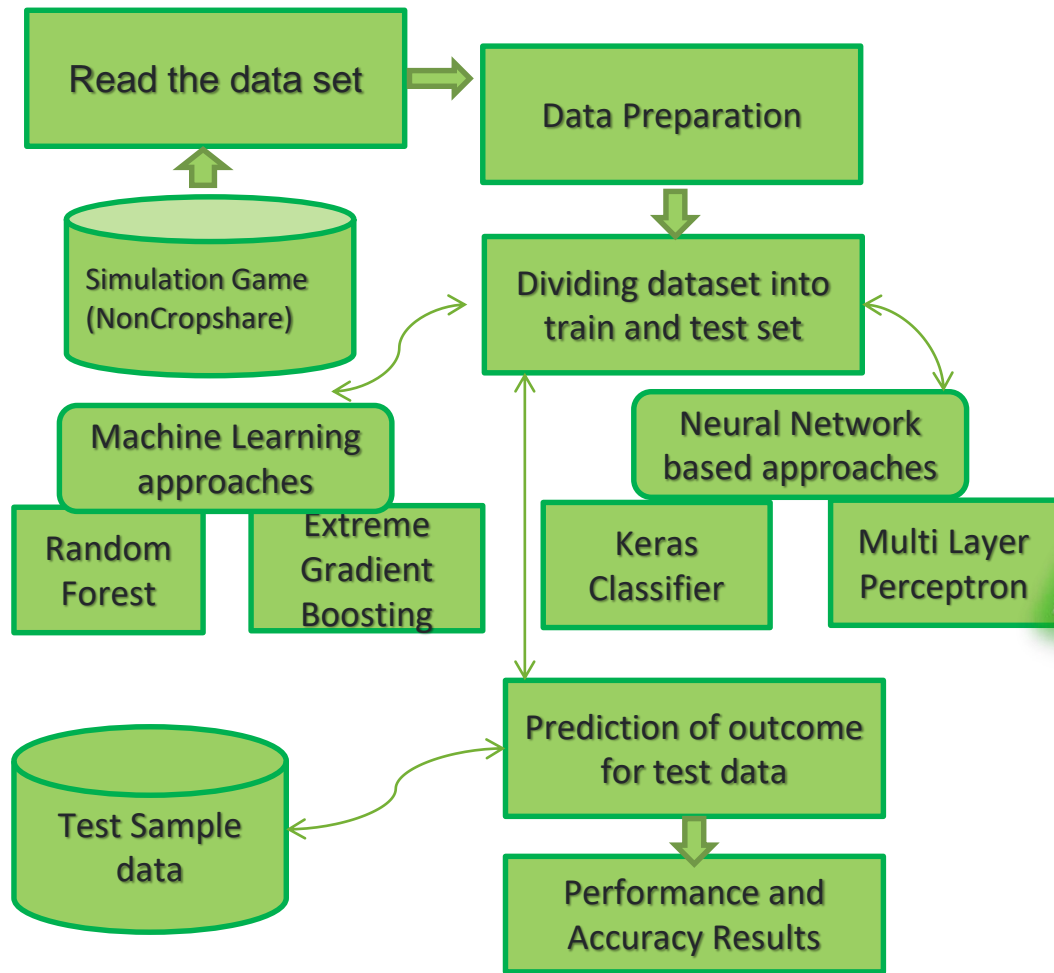
# NonCropshare: a Coordination Game as a tool to address land-use conservation conflict

	1. FOREST LANDS / FALLOW LANDS 	2. FARMLANDS 	
		MORE FERTILE	LESS FERTILE
YIELD 	0	12	10
ECOSYSTEM SERVICES 	-	+1 FOR NEIGHBOURING FARMLANDS	+1 FOR NEIGHBOURING FARMLANDS
SUBSIDIES 	VARIES	0	0

# Methods to build the models using machine learning and deep learning approaches



# Project Flow (Methodology)



# Results

Results							
Method1				Method2			
Random Forest	XGB Classifier	Keras Classifier	MLP classifier	Random Forest	XGB Classifier	Keras Classifier	MLP classifier
62%-68%	67%-73.46%	62.9%-69%	64%-68.63%	60%	80%	67%	64%



## Challenges & Limitations

- Given data is not a big data.
- Suitability of Neural network approach-  
Unstructured data.
- Lack of feature labels which may be  
important for algorithm.





# Conclusion



- Building model for Each cells –XGBoost classifier
- Building a single model for all cells- Keras Classifier

ANY QUESTIONS?

Thanks!

