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an Atlantaigh

Atlantic  
Technological  
University

**ATU Donegal**  
**LCCS Computer  
Science Workshop**  
**12th January 2023**



## Workshop

# 1

### 2023 Project brief key concepts (40 mins)

In this workshop we will investigate some of the key concepts required for this year's project, namely:

- > Game Modelling
- > Game Theory and Simulation
- > Data Analytics in game theory
- > Hypothesis development using game strategy
- > Game result prediction techniques
- > Using Abstraction in game strategy or game state implementation

## Workshop

# 2

### Data Analytics (40 mins)

In this workshop we will focus on writing information from a python program to a CSV file. Allowing students to then both analysis and create charts of the data being saved to the CSV file.

- > Data storage methods (database, file storage) - Cleaning the dataset to remove invalid data.
- > Pandas - Grouping the data which allows you to split your data into separate groups to perform computations for better analysis.
- > Data Analytics using Python – calculating frequency, mean, median and mode.
- > Data visualisation techniques using matplotlib.

## Workshop

# 3

### Project working example (40 mins)

In this workshop we will demonstrate, using a complete example how one specific game can be modelled and implemented using a computer system. How a particular game strategy can then be developed into a research hypothesis and how that hypothesis can be evaluated and tested using empirical analysis. The workshop will show the key stages of game development from:

- > Initial game research
- > Planning for your project
- > Game Design concepts
- > Implementation of the game and modelling game strategies/hypothesis
- > Testing the game implementation and models
- > Evaluation and Analysis of results and hypotheses

## Workshop

# 4

### Mock revision (40 mins)

Here we will take a look at some likely questions for this year's mock paper. We will examine some questions and demonstrate how to properly evaluate and understand a question before show the thought process when answering a question in a Computer Science exam.