

Project Title: Development of a new puzzle game

Client: Dr. Gabriel Walton (Mines Faculty)

Preferred Team Size: 3-4 students

Work Location: None specified

NDA Required? No

Project Summary

The overall purpose of this project is to build a puzzle game and implement it in an app for smartphone use.

The game “Rummikub” (<https://rummikub.com/>) involves building sets of numbered tiles that constitute numeric runs of the same color (i.e. “straight flushes”, in poker parlance) and sets of the same number (three or more tiles) in different colors. Each player’s goal is to remove all tiles from their “hand” by playing them in a communal “board”; players can re-arrange existing tiles on the board into new combinations of runs and sets that best allow them to play tiles from their hand to the board.

Towards the end of the game, many tiles are in play on the communal board, which means that many different valid re-arrangements are possible. A key skill at this stage of the game is to be able to identify/design a specific (valid!) re-arrangement of the existing tiles that will allow one to play the last remaining tile(s) from one’s hand to win the game.

The overall concept of this project is to develop a puzzle game that puts the player in the position of someone who has a turn where they can play their last remaining tile(s) by identifying the correct re-arrangement of the tiles.

After developing an understanding of the overall game of Rummikub and the specific puzzle game envisioned, the project team will have two major tasks:

- 1) Develop an algorithm that can randomly generate tile sets and arrangements that represent a “winnable” position (i.e. there is a solution).
- 2) Develop an interface that allows the puzzle game to be played (ideally in the form of an android-compatible phone app, although the specific form of the interface is flexible).