­ Lab 3 – Building a Ms. Pacman pro-player decision tree with ID3

Group: Group 4, Falkenström Maximilian, Forsberg Linus

# INTRODUCTION

In this assignment we were tasked with creating an AI for the classic arcade game of ms Pacman, with the help of an open source framework developed by researchers at the University of Essex. The AI controls ms Pacman, eating pellets and avoiding ghosts in a maze. The solution is developed in java with the platform intelliJ IDEA from the company Jetbrains. The AI learns how to make gameplay decisions from a decision tree that is generated from data that is previously recorded from human gameplay.

# DESIGN AND IMPLEMENTATION

The algorithm was implemented as it was presented from the slides from the lectures.

Instead of using the moves (UP, DOWN, LEFT, RIGHT) we used a custom strategy option (EAT\_PILLS, EAT\_GHOST, RUN\_AWAY) and later calculated the move based on the strategy.

The last nine columns of each tuple in the training set below represent if Blinky is vulnerable, if Blinky is dangerous then the same for the other ghosts in order of Pinky, Inky and Sue and lastly the strategy that the data represents if implemented correctly.

**Gathered data from the gameplay**

RIGHT;0;0;956;3;230;102;102;197;4;false;false;false;false;48;72;68;92;LEFT;RIGHT;LEFT;RIGHT;1293;220;4;695;586;554;496;false;true;false;false;false;false;false;false;RUN\_AWAY;

RIGHT;0;0;957;3;230;103;103;197;4;false;false;false;false;48;70;68;90;LEFT;RIGHT;LEFT;RIGHT;1293;220;4;694;614;558;495;false;true;false;false;false;false;false;false;RUN\_AWAY;

LEFT;0;0;958;3;230;104;104;197;4;false;false;false;false;48;68;68;88;LEFT;RIGHT;LEFT;RIGHT;1293;220;4;693;620;562;494;false;true;false;false;false;false;false;false;EAT\_PILLS;

LEFT;0;0;957;3;230;105;105;197;4;false;false;false;false;46;68;66;88;LEFT;RIGHT;LEFT;RIGHT;1293;220;4;692;626;566;493;false;true;false;false;false;false;false;false;EAT\_PILLS;

UP;0;0;1070;3;570;237;237;168;3;true;true;true;true;56;24;62;44;DOWN;UP;DOWN;UP;1293;220;4;1152;1246;1011;991;false;false;false;false;true;false;true;false;EAT\_GHOST;

UP;0;0;1064;3;570;238;238;168;3;true;true;true;true;57;23;63;43;DOWN;UP;DOWN;UP;1293;220;4;1152;1246;1011;991;false;false;false;false;true;false;true;false;EAT\_GHOST;

The strategy used when recording gameplay data was firstly to eat pills when no ghost is close. The second strategy was to run away from the ghosts if they come to close to ms Pacman and the third strategy was to chase after and eat the ghosts if they were vulnerable.

The parameters we used was the distance to the ghosts and if they were edible or not. We used these two combined to calculate if the ghosts are vulnerable or dangerous.

The information about the ghosts are most important as they tell us if it is safe to eat pills or not and whether we need to run away from the ghosts or chase after them.

**A figure of the resulting tree**

├── blinkyDangerous - EAT\_PILLS

│   ├── pinkyDangerous - EAT\_PILLS

│   │ ├── blinkyVulnerable - EAT\_PILLS

│   │ │   ├── sueDangerous - EAT\_PILLS

│   │ │   │ ├── inkyDangerous - EAT\_PILLS

│   │ │   │ │ ├── pinkyVulnerable - EAT\_PILLS

│   │ │   │ │ │   ├── sueVulnerable - EAT\_PILLS

│   │ │   │ │ │   │ ├── inkyVulnerable - EAT\_PILLS

│   │ │   │ │ │   │ │ └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ │ │   │ │ └── EAT\_GHOST - EAT\_GHOST

│   │ │   │ │ │   │ ├── inkyVulnerable - EAT\_PILLS

│   │ │   │ │ │   │ │ └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ │ │   │ │ └── EAT\_GHOST - EAT\_GHOST

│   │ │   │ │ │   ├── inkyVulnerable - EAT\_PILLS

│   │ │   │ │ │   │ ├── sueVulnerable - EAT\_PILLS

│   │ │   │ │ │   │ │ └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ │ │   │ │ └── EAT\_GHOST - EAT\_GHOST

│   │ │   │ │ │   │ ├── sueVulnerable - EAT\_PILLS

│   │ │   │ │ │   │ │ └── EAT\_GHOST - EAT\_GHOST

│   │ │   │ │ │   │ │ └── EAT\_GHOST - EAT\_GHOST

│   │ │   │ │ ├── sueVulnerable - EAT\_PILLS

│   │ │   │ │ │   ├── pinkyVulnerable - EAT\_PILLS

│   │ │   │ │ │   │ ├── inkyVulnerable - EAT\_PILLS

│   │ │   │ │ │   │ │ └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ │ │   │ │ └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ │ │   │ └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ │ │   ├── pinkyVulnerable - EAT\_PILLS

│   │ │   │ │ │   │ ├── inkyVulnerable - EAT\_PILLS

│   │ │   │ │ │   │ │ └── RUN\_AWAY - RUN\_AWAY

│   │ │   │ │ │   │ │ └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ │ │   │ ├── inkyVulnerable - EAT\_PILLS

│   │ │   │ │ │   │ │ └── RUN\_AWAY - RUN\_AWAY

│   │ │   │ │ │   │ │ └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ ├── pinkyVulnerable - EAT\_PILLS

│   │ │   │ │ ├── inkyDangerous - EAT\_PILLS

│   │ │   │ │ │   ├── inkyVulnerable - EAT\_PILLS

│   │ │   │ │ │   │ ├── sueVulnerable - EAT\_PILLS

│   │ │   │ │ │   │ │ └── RUN\_AWAY - RUN\_AWAY

│   │ │   │ │ │   │ │ └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ │ │   │ └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ │ │   ├── inkyVulnerable - EAT\_PILLS

│   │ │   │ │ │   │ ├── sueVulnerable - EAT\_PILLS

│   │ │   │ │ │   │ │ └── RUN\_AWAY - RUN\_AWAY

│   │ │   │ │ │   │ │ └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ │ │   │ └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ │ ├── inkyDangerous - EAT\_PILLS

│   │ │   │ │ │   ├── inkyVulnerable - EAT\_PILLS

│   │ │   │ │ │   │ ├── sueVulnerable - EAT\_PILLS

│   │ │   │ │ │   │ │ └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ │ │   │ │ └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ │ │   │ └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ │ │   ├── inkyVulnerable - EAT\_PILLS

│   │ │   │ │ │   │ ├── sueVulnerable - EAT\_PILLS

│   │ │   │ │ │   │ │ └── EAT\_GHOST - EAT\_GHOST

│   │ │   │ │ │   │ │ └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ │ │   │ └── EAT\_PILLS - EAT\_PILLS

│   │ │   ├── sueDangerous - EAT\_PILLS

│   │ │   │ ├── pinkyVulnerable - EAT\_PILLS

│   │ │   │ │ ├── inkyVulnerable - EAT\_PILLS

│   │ │   │ │ │   ├── sueVulnerable - EAT\_PILLS

│   │ │   │ │ │   │ ├── inkyDangerous - EAT\_PILLS

│   │ │   │ │ │   │ │ └── EAT\_GHOST - EAT\_GHOST

│   │ │   │ │ │   │ │ └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ │ │   │ ├── inkyDangerous - EAT\_PILLS

│   │ │   │ │ │   │ │ └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ │ │   │ │ └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ │ │   ├── sueVulnerable - EAT\_PILLS

│   │ │   │ │ │   │ ├── inkyDangerous - EAT\_PILLS

│   │ │   │ │ │   │ │ └── EAT\_GHOST - EAT\_GHOST

│   │ │   │ │ │   │ │ └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ │ │   │ ├── inkyDangerous - EAT\_PILLS

│   │ │   │ │ │   │ │ └── EAT\_GHOST - EAT\_GHOST

│   │ │   │ │ │   │ │ └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ │ ├── sueVulnerable - EAT\_PILLS

│   │ │   │ │ │   ├── inkyVulnerable - EAT\_PILLS

│   │ │   │ │ │   │ ├── inkyDangerous - EAT\_PILLS

│   │ │   │ │ │   │ │ └── EAT\_GHOST - EAT\_GHOST

│   │ │   │ │ │   │ │ └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ │ │   │ ├── inkyDangerous - EAT\_PILLS

│   │ │   │ │ │   │ │ └── EAT\_GHOST - EAT\_GHOST

│   │ │   │ │ │   │ │ └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ │ │   ├── inkyVulnerable - EAT\_PILLS

│   │ │   │ │ │   │ ├── inkyDangerous - EAT\_PILLS

│   │ │   │ │ │   │ │ └── EAT\_GHOST - EAT\_GHOST

│   │ │   │ │ │   │ │ └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ │ │   │ ├── inkyDangerous - EAT\_PILLS

│   │ │   │ │ │   │ │ └── EAT\_GHOST - EAT\_GHOST

│   │ │   │ │ │   │ │ └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ ├── pinkyVulnerable - EAT\_PILLS

│   │ │   │ │ ├── inkyVulnerable - EAT\_PILLS

│   │ │   │ │ │   ├── inkyDangerous - EAT\_PILLS

│   │ │   │ │ │   │ ├── sueVulnerable - EAT\_PILLS

│   │ │   │ │ │   │ │ └── EAT\_GHOST - EAT\_GHOST

│   │ │   │ │ │   │ │ └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ │ │   │ └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ │ │   └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ │ └── EAT\_PILLS - EAT\_PILLS

│   │ ├── inkyVulnerable - EAT\_PILLS

│   │ │   ├── sueVulnerable - EAT\_PILLS

│   │ │   │ ├── sueDangerous - EAT\_PILLS

│   │ │   │ │ ├── inkyDangerous - EAT\_PILLS

│   │ │   │ │ │   ├── blinkyVulnerable - EAT\_PILLS

│   │ │   │ │ │   │ ├── pinkyVulnerable - EAT\_PILLS

│   │ │   │ │ │   │ │ └── RUN\_AWAY - RUN\_AWAY

│   │ │   │ │ │   │ │ └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ │ │   │ └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ │ │   ├── blinkyVulnerable - EAT\_PILLS

│   │ │   │ │ │   │ ├── pinkyVulnerable - EAT\_PILLS

│   │ │   │ │ │   │ │ └── RUN\_AWAY - RUN\_AWAY

│   │ │   │ │ │   │ │ └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ │ │   │ └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ │ ├── inkyDangerous - EAT\_PILLS

│   │ │   │ │ │   ├── blinkyVulnerable - EAT\_PILLS

│   │ │   │ │ │   │ ├── pinkyVulnerable - EAT\_PILLS

│   │ │   │ │ │   │ │ └── RUN\_AWAY - RUN\_AWAY

│   │ │   │ │ │   │ │ └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ │ │   │ └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ │ │   ├── blinkyVulnerable - EAT\_PILLS

│   │ │   │ │ │   │ ├── pinkyVulnerable - EAT\_PILLS

│   │ │   │ │ │   │ │ └── RUN\_AWAY - RUN\_AWAY

│   │ │   │ │ │   │ │ └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ │ │   │ └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ ├── blinkyVulnerable - EAT\_PILLS

│   │ │   │ │ ├── pinkyVulnerable - EAT\_PILLS

│   │ │   │ │ │   ├── inkyDangerous - EAT\_PILLS

│   │ │   │ │ │   │ ├── sueDangerous - EAT\_PILLS

│   │ │   │ │ │   │ │ └── RUN\_AWAY - RUN\_AWAY

│   │ │   │ │ │   │ │ └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ │ │   │ └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ │ │   └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ │ └── EAT\_PILLS - EAT\_PILLS

│   │ │   ├── sueVulnerable - EAT\_PILLS

│   │ │   │ ├── blinkyVulnerable - EAT\_PILLS

│   │ │   │ │ ├── pinkyVulnerable - EAT\_PILLS

│   │ │   │ │ │   ├── inkyDangerous - EAT\_PILLS

│   │ │   │ │ │   │ ├── sueDangerous - EAT\_PILLS

│   │ │   │ │ │   │ │ └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ │ │   │ │ └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ │ │   │ └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ │ │   └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ │ └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ ├── blinkyVulnerable - EAT\_PILLS

│   │ │   │ │ ├── pinkyVulnerable - EAT\_PILLS

│   │ │   │ │ │   ├── inkyDangerous - EAT\_PILLS

│   │ │   │ │ │   │ ├── sueDangerous - EAT\_PILLS

│   │ │   │ │ │   │ │ └── EAT\_GHOST - EAT\_GHOST

│   │ │   │ │ │   │ │ └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ │ │   │ └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ │ │   └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ │ └── EAT\_PILLS - EAT\_PILLS

│   ├── inkyDangerous - EAT\_PILLS

│   │ ├── pinkyDangerous - EAT\_PILLS

│   │ │   ├── pinkyVulnerable - EAT\_PILLS

│   │ │   │ ├── sueDangerous - EAT\_PILLS

│   │ │   │ │ ├── sueVulnerable - EAT\_PILLS

│   │ │   │ │ │   ├── blinkyVulnerable - EAT\_PILLS

│   │ │   │ │ │   │ ├── inkyVulnerable - EAT\_PILLS

│   │ │   │ │ │   │ │ └── RUN\_AWAY - RUN\_AWAY

│   │ │   │ │ │   │ │ └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ │ │   │ └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ │ │   ├── blinkyVulnerable - EAT\_PILLS

│   │ │   │ │ │   │ ├── inkyVulnerable - EAT\_PILLS

│   │ │   │ │ │   │ │ └── RUN\_AWAY - RUN\_AWAY

│   │ │   │ │ │   │ │ └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ │ │   │ └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ │ ├── blinkyVulnerable - EAT\_PILLS

│   │ │   │ │ │   ├── inkyVulnerable - EAT\_PILLS

│   │ │   │ │ │   │ ├── sueVulnerable - EAT\_PILLS

│   │ │   │ │ │   │ │ └── RUN\_AWAY - RUN\_AWAY

│   │ │   │ │ │   │ │ └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ │ │   │ └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ │ │   └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ ├── blinkyVulnerable - EAT\_PILLS

│   │ │   │ │ ├── inkyVulnerable - EAT\_PILLS

│   │ │   │ │ │   ├── sueVulnerable - EAT\_PILLS

│   │ │   │ │ │   │ ├── sueDangerous - EAT\_PILLS

│   │ │   │ │ │   │ │ └── RUN\_AWAY - RUN\_AWAY

│   │ │   │ │ │   │ │ └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ │ │   │ └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ │ │   └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ │ └── EAT\_PILLS - EAT\_PILLS

│   │ │   ├── sueDangerous - EAT\_PILLS

│   │ │   │ ├── sueVulnerable - EAT\_PILLS

│   │ │   │ │ ├── inkyVulnerable - EAT\_PILLS

│   │ │   │ │ │   ├── blinkyVulnerable - EAT\_PILLS

│   │ │   │ │ │   │ ├── pinkyVulnerable - EAT\_PILLS

│   │ │   │ │ │   │ │ └── RUN\_AWAY - RUN\_AWAY

│   │ │   │ │ │   │ │ └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ │ │   │ └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ │ │   ├── blinkyVulnerable - EAT\_PILLS

│   │ │   │ │ │   │ ├── pinkyVulnerable - EAT\_PILLS

│   │ │   │ │ │   │ │ └── RUN\_AWAY - RUN\_AWAY

│   │ │   │ │ │   │ │ └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ │ │   │ └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ │ ├── blinkyVulnerable - EAT\_PILLS

│   │ │   │ │ │   ├── pinkyVulnerable - EAT\_PILLS

│   │ │   │ │ │   │ ├── inkyVulnerable - EAT\_PILLS

│   │ │   │ │ │   │ │ └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ │ │   │ │ └── RUN\_AWAY - RUN\_AWAY

│   │ │   │ │ │   │ └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ │ │   └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ ├── blinkyVulnerable - EAT\_PILLS

│   │ │   │ │ ├── pinkyVulnerable - EAT\_PILLS

│   │ │   │ │ │   ├── inkyVulnerable - EAT\_PILLS

│   │ │   │ │ │   │ ├── sueVulnerable - EAT\_PILLS

│   │ │   │ │ │   │ │ └── RUN\_AWAY - RUN\_AWAY

│   │ │   │ │ │   │ │ └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ │ │   │ └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ │ │   └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ │ └── EAT\_PILLS - EAT\_PILLS

│   │ ├── pinkyDangerous - EAT\_PILLS

│   │ │   ├── sueDangerous - EAT\_PILLS

│   │ │   │ ├── pinkyVulnerable - EAT\_PILLS

│   │ │   │ │ ├── blinkyVulnerable - EAT\_PILLS

│   │ │   │ │ │   ├── inkyVulnerable - EAT\_PILLS

│   │ │   │ │ │   │ ├── sueVulnerable - EAT\_PILLS

│   │ │   │ │ │   │ │ └── RUN\_AWAY - RUN\_AWAY

│   │ │   │ │ │   │ │ └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ │ │   │ └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ │ │   └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ │ ├── blinkyVulnerable - EAT\_PILLS

│   │ │   │ │ │   ├── inkyVulnerable - EAT\_PILLS

│   │ │   │ │ │   │ ├── sueVulnerable - EAT\_PILLS

│   │ │   │ │ │   │ │ └── RUN\_AWAY - RUN\_AWAY

│   │ │   │ │ │   │ │ └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ │ │   │ └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ │ │   └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ ├── blinkyVulnerable - EAT\_PILLS

│   │ │   │ │ ├── pinkyVulnerable - EAT\_PILLS

│   │ │   │ │ │   ├── inkyVulnerable - EAT\_PILLS

│   │ │   │ │ │   │ ├── sueVulnerable - EAT\_PILLS

│   │ │   │ │ │   │ │ └── RUN\_AWAY - RUN\_AWAY

│   │ │   │ │ │   │ │ └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ │ │   │ └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ │ │   └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ │ └── EAT\_PILLS - EAT\_PILLS

│   │ │   ├── sueDangerous - EAT\_PILLS

│   │ │   │ ├── blinkyVulnerable - EAT\_PILLS

│   │ │   │ │ ├── pinkyVulnerable - EAT\_PILLS

│   │ │   │ │ │   ├── inkyVulnerable - EAT\_PILLS

│   │ │   │ │ │   │ ├── sueVulnerable - EAT\_PILLS

│   │ │   │ │ │   │ │ └── RUN\_AWAY - RUN\_AWAY

│   │ │   │ │ │   │ │ └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ │ │   │ └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ │ │   └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ │ └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ ├── blinkyVulnerable - EAT\_PILLS

│   │ │   │ │ ├── pinkyVulnerable - EAT\_PILLS

│   │ │   │ │ │   ├── inkyVulnerable - EAT\_PILLS

│   │ │   │ │ │   │ ├── sueVulnerable - EAT\_PILLS

│   │ │   │ │ │   │ │ └── RUN\_AWAY - RUN\_AWAY

│   │ │   │ │ │   │ │ └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ │ │   │ └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ │ │   └── EAT\_PILLS - EAT\_PILLS

│   │ │   │ │ └── EAT\_PILLS - EAT\_PILLS

The accuracy for the training was 0.77.

# CONCLUSION AND FUTURE WORK

The resulting decision tree is somewhat accurate when compared to the recorded gameplay. Some variables we didn’t have time to implement, for example our AI does not take power pills into consideration and also ignores the ghost edible time when chasing after them.

Different volumes of training data does not seem to affect the performance of the AI too much. The tree performs reasonably well but the implementation of how the AI should execute the strategies could use some work. More attributes could be implemented to improve the tree even further.

Things that could have been done differently are better planning, meaning more thoroughly plan for what strategies and attributes to use.

We learned how to implement the ID3 algorithm and the concepts of building a decision tree.

Some improvements could be made in our algorithm. Codewise we have a bit of duplicate code that could possibly have been written once and more cleanly. We could have used more advanced strategies. Decision trees could be used in any domain where decisions is to be made where there is a finite number of options.