Udacity AIND Dec 2017 cohort **Author: Rohit Jain** **March 20, 2018**

Isolation Heuristics

- **custom_score** : Calculates the heuristic value of a game state as the difference between available player moves and twice the available opponent moves
    - Results – (AB_custom Win Rate over 23 tournament.py runs)
        - **Mean** : 71.37% **Median** : 71.4% **Range** : 64.3% - 80%
    - Computation Complexity –
        - Very few calculations are required in evaluation thus allowing more time for iterative deepening to explore deeper.
    - Inference –
        - Offensive game play with constant double weight age to negative of opponent moves ensures that the player is choosing moves with a goal of limiting opponent's moves.

- **custom_score_2** : Calculates the heuristic value of a game state as the % game complete weighted difference of available player moves and square of available opponent moves
    - Results – (AB_custom_2 Win Rate over 23 tournament.py runs)
        - **Mean** – 70.43% **Median** – 71.4% **Range** - 57.1% - 77.1%
    - Computation Complexity –
        - Relatively more calculations are required but still it is fast enough.
    - Inference –
        - Dynamic scaled game play with offensive ramp up based on increased weightage to negative of square of opponent moves as game progresses. Player starts with defensive moves, ramps up the offensive moves and becomes completely offensive towards the completion of game.

- **custom_score_3:** Calculates the heuristic value of a game state as the difference between player moves and twice the available opponent moves minus the scaled distance from center.
    - Results – (AB_custom_3 Win Rate over 23 tournament.py runs)
        - **Mean** – 70.63% **Median** – 71.4% **Range** - 64.3% - 75.7%
    - Computation Complexity –
        - Relatively more calculations are required but still it is fast enough.
    - Inference –
        - Offensive game play with constant double weightage to negative of opponent moves with built in check to reduce the distance from center to ensure that the player does not drift to peripheries of the board and that the player is choosing moves with a goal of limiting opponent's moves.