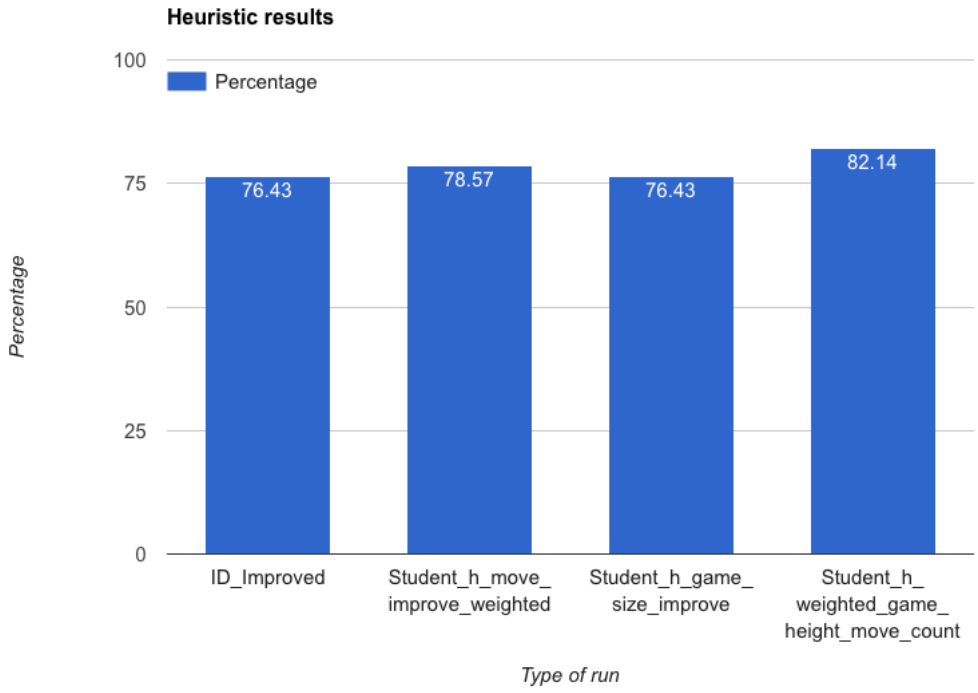
Heuristic Analysis

A picture speaks for itself. Here is my chart with three heuristic functions compared to the ID_Improved.



The three heuristic functions I used are –

1. **Move Improved Weighted (Student_h_move_improve_weighted)**: This is like improved_score version, only that you apply random weights. This is for a trial to see what works and what does not. I saw that this one works much better for small number of games.
2. **Game Size Improve (Student_h_game_size_improve)**: This is Heuristic to improve by using game move and height ratio as compared to the opponent's moves. Again for small games (1, 2) this works better than ID_Improved.
3. **Move Count Game Height Weighted (Student_h_weighted_game_height_move_count)**: Game size, using the middle ground of the game to decide the improvement.
   else it is just simple improved_score. This is by far my best attempt.

Run

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************************
 Evaluating: ID_Improved
************************

Playing Matches:
----------
  Match 1: ID_Improved vs   Random       Result: 19 to 1
  Match 2: ID_Improved vs   MM_Null      Result: 17 to 3
  Match 3: ID_Improved vs   MM_Open      Result: 17 to 3
  Match 4: ID_Improved vs MM_Improved    Result: 14 to 6
  Match 5: ID_Improved vs   AB_Null      Result: 18 to 2
  Match 6: ID_Improved vs   AB_Open      Result: 11 to 9
  Match 7: ID_Improved vs AB_Improved    Result: 11 to 9


Results:
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ID_Improved         76.43%

************************
Evaluating: Student_h_move_improve_weighted
************************

Playing Matches:
----------
  Match 1: Student_h_move_improve_weighted vs   Random          Result: 18 to 2
  Match 2: Student_h_move_improve_weighted vs   MM_Null         Result: 17 to 3
  Match 3: Student_h_move_improve_weighted vs   MM_Open         Result: 16 to 4
  Match 4: Student_h_move_improve_weighted vs MM_Improved       Result: 17 to 3
  Match 5: Student_h_move_improve_weighted vs   AB_Null         Result: 13 to 7
  Match 7: Student_h_move_improve_weighted vs AB_Improved       Result: 14 to 6


Results:
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Student_h_move_improve_weighted     78.57%

************************
Evaluating: Student_h_game_size_improve
************************

Playing Matches:
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  Match 1: Student_h_game_size_improve vs   Random      Result: 20 to 0
  Match 2: Student_h_game_size_improve vs   MM_Null     Result: 15 to 5
  Match 3: Student_h_game_size_improve vs   MM_Open     Result: 15 to 5
  Match 4: Student_h_game_size_improve vs MM_Improved   Result: 14 to 6
  Match 5: Student_h_game_size_improve vs   AB_Null     Result: 15 to 5
  Match 6: Student_h_game_size_improve vs   AB_Open     Result: 13 to 7
  Match 7: Student_h_game_size_improve vs AB_Improved   Result: 15 to 5


Results:
----------
Student_h_game_size_improve     76.43%

************************
Evaluating: Student_h_weighted_game_height_move_count
************************

Playing Matches:
----------
  Match 1: Student_h_weighted_game_height_move_count vs   Random       Result: 19 to
1
  Match 2: Student_h_weighted_game_height_move_count vs   MM_Null      Result: 17 to
3
  Match 3: Student_h_weighted_game_height_move_count vs   MM_Open      Result: 17 to
3
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  Match 4: Student_h_weighted_game_height_move_count vs MM_Improved    Result: 14 to
6
  Match 5: Student_h_weighted_game_height_move_count vs   AB_Null      Result: 16 to
4
  Match 6: Student_h_weighted_game_height_move_count vs   AB_Open      Result: 16 to
4
  Match 7: Student_h_weighted_game_height_move_count vs AB_Improved    Result: 16 to
4


Results:
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Student_h_weighted_game_height_move_count     82.14%
```