The neighbouring countries are getting better at curling.

Curling Science Project: to support tactical phase

Our Goal
Pointing out the tactical role of each position by analysing the accelerated game information database to support tactics in curling.

Detailed Analysis of the Shot-Score
Display the score of the opponent
Difference in the Final Game Score
-20 -15 0 5 10 15 20
Correlation Coefficient
-2.00 -1.50 -1.00 -0.50 0.00 0.50 1.00 1.50 2.00
Shot-Score (Tactic performance skills)
Five-point scale which indicates how the player complies with the instructions of the skip player (game captain)
0 point (faulty) 4 points (perfect)

Methods
Investigation of 3,621 shots extracted from 26 games of all four tournaments by iCE in the 2014-2015 season and the 2015-2016 season.

Analysis
Team
Correlation Coefficient : 0.916
Strong positive correlation between DFGS and DTSS.
If the shot-score of the competing team and one’s own team is known, the match result can be roughly predicted.

Lead
Correlation Coefficient : 0.763
This position covers first moves of the game and there is the Free Guard Zone Role that applies only to this position.
There is a strong correlation to the final score by the Free Guard Zone Role.

Second
Correlation Coefficient : 0.698
Guard shot → Protect themselves
Decrease the number of stones in the house for reducing the risk of one’s own team.
Role of this position will change depend on the situation and team tactics.

Third
Correlation Coefficient : 0.738
Third and Second: Supporting role which is not related directly to the score.

Fourth
Correlation Coefficient : 0.868
Always responsible for the final shot in the end.
Strongest correlation in all positions. Greatly influences the final score.

Conclusions
- Strong positive correlation between the shot-score difference and the score difference.
  → The match result can be roughly predicted.
- Analysis focusing on the shot-score is effective in finding characteristics for each position.
  → Fourth and Lead: Tactical role which is related directly to the score.
  → Third and Second: Supporting role which is not related directly to the score.

Analysis focusing on the shot score is valid for feature extraction of each team and player.

Future Work
- Increasing the size of the game information database.
- Analysing tactical role of each position and each team.
- Aim to support the Japanese national team in the Winter Olympic games in 2018.