

General considerations

When the search space is intractable because of size, we don't define a strategy explicitly (i.e., by listing all possible (stat, action) pairs). Instead, we define the strategy as a set of *rules*. A rule is a way to group states into clusters, where the states in a given cluster have features (in common) that suggest similar decisions (moves).

A first set of tentative rules for our automated Twixt learner

$$1) f_1(P) = Tl_b(P) / s^2$$

where:

- P is a player;
- $Tl_b(P)$ = total length of bridges owned by P ;
- s = side of board.

$$2) f_2(P1) = f_1(P1) - f_1(P2)$$

$$3) f_3(P) = Lcp$$

where:

- Lcp = longest connected path for player P .

$$4) f_4(P) = Tlv/s$$

where Tlv is the total length covered by the projections of the bridges of player P in the direction of the sides of the board owned by P 's opponent.

$$5) f_5(P) = Tlh/s$$

where Tlh is the total length covered by the projections of the bridges of player P in the direction of the sides of the board owned by P .

$$6) f_6(P) = 1/f_4(P)$$

$$7) f_7(P) = 1/f_5(P)$$

$$8) f_8(P) = Ncm(P)/Ncn(P)$$

where:

- $Ncm(P)$ = number of available connecting moves (i.e., sum over all nodes owned by P of the number of nodes that could be connected to the current one in one move. Do not count the moves that are blocked).
- $Ncn(P)$ = number of connected nodes owned by P .