CENG 491

Computer Engineering Design

Weekly Progress Report – 2

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Work Done :

We have finished some of rule based agents namely No Last 2 Tricks, No Hearts and No Jacks or Kings.

This week İlkcan and Volkan completed rule based no hearts players. Just as other players, no hearts players have two different versions; easier one and advanced one. The logic behind this players are similar, but the harder has more rules than the easier one. Thus, the harder version plays better when same cards are delivered. It does not mean in every situation the harder one wins because the luck factor is very important in no hearts games, too.

Firstly,the game logic behind the first version will be explained:

Our agent calculates each suit's amount in his hand and finds the minimum one. The main goal is to get rid of these cards so that next time that suit is thrown, the player can throw heart in his hand. There are three available options:

If our player is the hand starter, he checks the past cards for a suit and if its number is less than eight, then it throws the maximum card,else it throws minimum card of that suit in his hand.

If our player is the second or the third player, if first thrown suit is not hearts, available cards does not contain hearts and contains first thrown suit, it checks the

number of suit of first thrown one's,if it is less than 7, it throws the maximum one,else it throws the minimum one. If first thrown suit is not hearts and he does not have the suit of first thrown one's, he throws the maximum hearts in his hand. If the first thrown suit is hearts, our player throws the maximum hearts that is less than thrown cards.

If our player is the last player, it checks whether it is possible not to take turn,if it is possible it throws the maximum card in his hand that is less than thrown cards. If it is not, he takes the turn with his maximum card.

Alper completed rule based no kings or jacks player. This game type of King game aims not take jacks or king from any suits.The players who have taken jack(s) or king(s) in one turn lose 60 points for each jack or king they have taken.If one player does not have the card from current turn's suit (s)he must throw jack or king if (s)he has jack or king. So players who throw jack or king reduces the chance of getting kings or jacks.

Alper has implemented two agents for this game type.Each agent in each turn knows the pastcards,current thrown cards on the related turn and its hand,then decides the card which it will throw.The agents are splitted out from each other by level difference.Two agents generally follow same algorithm but the one whose level is higher checks more specific cases.The agents generally decide the which card to throw according to below algorithm.

if -> starter of turn is itself

if -> all cards' rank in the hand is lower than jack

decide the card from available cards by checking the number of pastcards from the current suit

else->

if-> there is minimum type (whose # of cards at the beginning is lower than 3)

start from playing minimum type

else->

if ->there is possibility of stroke

throw min card from available cards by checking not the take jacks or kings from other players

else->

throw max card from available cards by checking not the take jacks or kings from other players

else->

if -> all cards' rank in the hand is lower than jack

if -> our agent is striking (means agent does not have the card from thrown suit)

throw max card

else->

if ->there is possibility of stroke

throw min card from available cards

else->

throw max card from available cards

else->

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if-> our agent  is striking

        if->  available cards contains Jack or King
                prefer first King then Jack
        else->

                if-> available cards contains Ace or Quenn
                        prefer first Ace then Quenn
                else->
                throw max card

else->
        if-> available cards contains Jack or King

                check the thrown cards
                if->our agent can give the Jack or King to other  players
                        throw Jack or King

                if-> available cards contains Ace or Quenn
                        if->our agent can give the Ace or Quenn to other players
                                throw Ace or Quenn
                        else->
                                 if ->there is possibility of stroke
                                        throw min card from available cards
                                else->
                                        throw max card from available cards
                else->
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                    if ->there is possibility of stroke
                        throw min card from available cards
                    else->
                        throw max card from available cards

else if ->available cards contains Ace or Quenn

        check thrown cards
        if->our agent can give the Ace or Quenn to other players
                    throw Ace or Quenn
        else->
            if ->there is possibility of stroke
                    throw min card from available cards
            else->
                    throw max card from available cards

else->
        if ->there is possibility of stroke
            throw min card from available cards
        else->
            throw max card from available cards
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Taylan has completed rule based no last 2 tricks agent.Let me briefly explain how it is played.

No Last 2 Tricks: Players try to not to take the tricks at the last two turn. Last two tricks worth -180 points , therefore players usually throw biggest cards in the first turns of the game and they try to not to take the turn to themselves on last turns.

Taylan implemented two version of rule based agent for NoLast2Trick game. One

of them is improved version of the other.

The game logic is like the following:

if turn is last five turns of the game

if player is first player

1st preference: select the suits which other players has bigger cards of that suit,

then select the suit which has less number in players' hand ,

then select the card from that suit which is maximum in our hand and not maximum one of the cards from other players' cards.

2nd preference : throw the smallest card from hand.

else

if player has suit from the table's suit

- do not take the hand and also do not throw the very small cards from hand

else

- select the cards from each suit which is maximum of that suit in player's hand and the number of cards from that suit is bigger than two.

then throw the card which is the maximum of these selected cards

else

if player is not the 4th player

1st preference: select the cards from each suit which is the maximum of all players' cards.

then throw the card from these selected cards whose suit has less number of cards in player's hand.

2nd preference: throw the biggest card from hand

else

throw the biggest card from hand.