Email one: Clarification of project

Hei Ladan,

The first part of the task is to teach the Tsetlin Machine what a winning game looks like. I would therefore first focus on the endings of each game you have produced and add a label of who has won the game. The state of the game we call X, and the winner is Y. This is common terminology for classification tasks, and therefore all examples you can find at the tmu github folders have these. The project should use the Graph Tsetlin Machine, which has its implementation on github as well, but it is for the MNIST dataset. The MNIST is slightly different than the Hex game, since we care about physically written numbers and not a game's state of the board.

I think a good start would be encoding the state of the board into the Graph Tsetlin Machine.

Similarly to the example, where we encode row and column, and then Patch pixel symbol:

# Column and row symbols

for i in range(dim):

    symbol\_names.append("C:%d" % (i))

    symbol\_names.append("R:%d" % (i))

# Patch pixel symbols

for i in range(patch\_size\*patch\_size):

    symbol\_names.append(i)

(

Then I would recommend trying to encode other info that could help the Tsetlin Machine make proper prediction. Information like, this cell is touching the edge wall of a red / blue player, this stone is this far from its wall etc.  
Once you get some understanding on what helps to decide the end state of the game, you should be ready to move on to deciding what information would be good to encode for deciding the winner one step before the end of the game.

Hope that helps!

Kind regards,

Vojtech

Email two: required libraries

Hei Ladan,

The dependencies should be sorted out when you install the tmu:

<https://github.com/cair/tmu>

If you are using the fe.uia.no server, I can recommend keeping these at the top, since they need to be reinstalled after every crash of the server:

!pip install numpy keras tensorflow scikit-learn scipy tqdm pillow opencv-python optuna

!pip install git+https://github.com/cair/tmu.git

Kind regards,

---

Vojtech Halenka

PhD Stipendant

University of Agder