**CSE 620A**

**Spring 2021**

**Day 6 Activity**

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Work with your assigned partner for the final project. Go through the activities below and write down answers for activities 2 and 3. Submit your final document to Canvas.

1. **Start by skimming through the articles posted in Canvas → Files → Lecture Slides → Day 6 Activity**:

* **ASP at a Glance.pdf**

Read the pink boxes on p. 3 (ASP-based Team Building at Gioia Tauro Seaport), p. 7 (ASP for Repairing Large-Scale Biological Networks), and p. 8 (ANTON – An ASP-based Music Composition System).

* **bal09c.pdf, bg11.pdf, efmp20.pdf, gjkosss13.pdf, il15.pdf**

Read the abstracts and skim through the introduction sections of these papers to get to exposed to different types of problems that were solved using logic programming.

1. **List two ideas of projects that you have in mind.**

**Idea #1: Poker Hand Evaluation Solver**

**Idea #2: Draft Pick Solver**

1. **For each of the two ideas you listed above, answer the following questions.**

The questions are supposed to help you select the best idea for your final project and justify why the chosen idea is suitable for logic programming. Provide short explanations whenever you cannot give a clear Yes/No answer.

**Idea #1: Poker Hand Evaluation Solver**

* Is the knowledge to be encoded mostly qualitative, or mostly quantitative?

Quantitative

* Would you qualify the knowledge to be encoded as “expert knowledge” in some domain?

Not at all, it requires a very amateur understanding of the topic

* Do you need a small data sample to create the encoding, or a large training data set?

Small, 52 Cards in a Deck of Playing Cards

* Is this knowledge that is already known and just needs to be encoded, or is this a problem related to discovering an unknown pattern in the data?

Already known.

* Is this a combinatorial search problem (i.e., one in which there are many possible combinations that can lead to a solution, but actually just one or some are of these combinations are valid solutions)?

Depending on the route, this can be both. To find the best hand out of a set of cards this would yield one solution, to evaluate all better hands, that would be a combinatorial search problem.

* Is this a problem about a dynamic domain (i.e., a domain in which actions happen and lead to changes that can be tracked from time step to time step)? If so, what task will you solve: projecting the end state of the world after a series of actions are performed; figuring out plans to accomplish goals; determining why observations do not match expectations; or some other task?

If we evaluate the game in a series of steps instead of as a freeze frame, this will be dynamic, otherwise it will not be.

* Does this domain involve uncertainty or incomplete information (i.e., unknown pieces of information)?

Evaluation of the best hand will be complete information. Evaluation of better hands or the other hands at the table will be hidden information if this is intended to predict the quality of the other hands at the table

* Does this domain involve default statements (i.e., statements of the type “*Normally*, birds fly”, “*Generally*, X holds”; there may be exceptions to these statements/rules)?

The rules should be fixed at all time as Poker is a fixed game. Nothing can happen outside the rules for the purpose of our application.

**Idea #2: Draft Pick Solver**

* Is the knowledge to be encoded mostly qualitative, or mostly quantitative?

Quantitative, the focus being player statistics

* Would you qualify the knowledge to be encoded as “expert knowledge” in some domain?

Knowledge of the quality of players, positions, and availability would all likely fall under expert

domain knowledge

* Do you need a small data sample to create the encoding, or a large training data set?

For all intents and purposes, the size of the data set is small, only including the current players in the league.

* Is this knowledge that is already known and just needs to be encoded, or is this a problem related to discovering an unknown pattern in the data?

The knowledge is already known, the problem is by nature optimization.

* Is this a combinatorial search problem (i.e., one in which there are many possible combinations that can lead to a solution, but actually just one or some are of these combinations are valid solutions)?

This is a combinatorial search, likely will multiple correct solutions.

* Is this a problem about a dynamic domain (i.e., a domain in which actions happen and lead to changes that can be tracked from time step to time step)? If so, what task will you solve: projecting the end state of the world after a series of actions are performed; figuring out plans to accomplish goals; determining why observations do not match expectations; or some other task?

The individual draft phase takes place dynamically, so each time step would revolve around selecting a single player and removing them from the overall options. The objective is to figure out the end state for all teams drafting and determine their final team states

* Does this domain involve uncertainty or incomplete information (i.e., unknown pieces of information)?\

Incomplete information would be how other players pick their players for the draft.

* Does this domain involve default statements (i.e., statements of the type “*Normally*, birds fly”, “*Generally*, X holds”; there may be exceptions to these statements/rules)?

Assuming the way football is played does not change drastically, statements will hold.