

KBAI Homework 1 (Spring 2022)

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QUESTION 1

1.1 How to construct a semantic network representing this problem

I found three key components to represent the state in this problem.

“planet” field shows who is currently on the planet. For example, if all three are on the planet, the planet field will be “planet : Rey, Snoke, Kylo Ren”.

“ship” field works in the same way as “planet”. For example, if no one is in the ship yet, the ship field will be “ship : None”.

“shuttle” field will show where the shuttle is currently at. It is either on the planet or ship and it would take alternate turns. For example, if the “shuttle : planet” in the current state, it should change to “shuttle : ship” in the next state.

The operator here is to move “one of Rey, Snoke, Kylo Ren” to “either planet or ship”. You can see the state representation and how the operator works in the figure below. For real estate efficiency, I abbreviated “Kylo Ren” to “Kylo”.

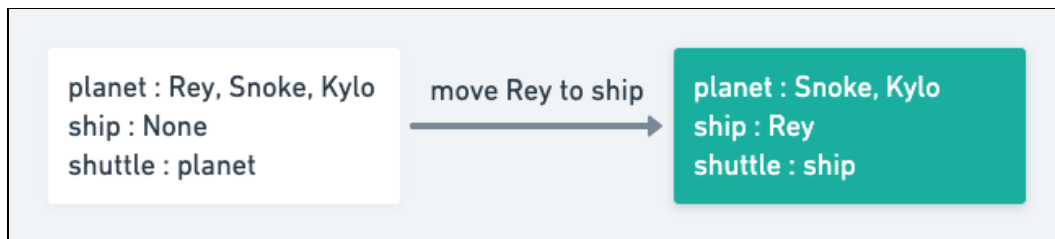


Figure 1—Two states with a transition between them

1.2 Generate & Test approach to solve the problem

I generated all possible states that can stem from the current state first, and then applied the tester to filter out invalid states and determine valid ones like below:

- “Red” state means it violates the rule, thus invalid.
- “Orange” state means it is duplicate to one of previous states.
- “Light green” state means it is a valid state but it has not met the goal yet.
- “Dark green” state means it met the goal

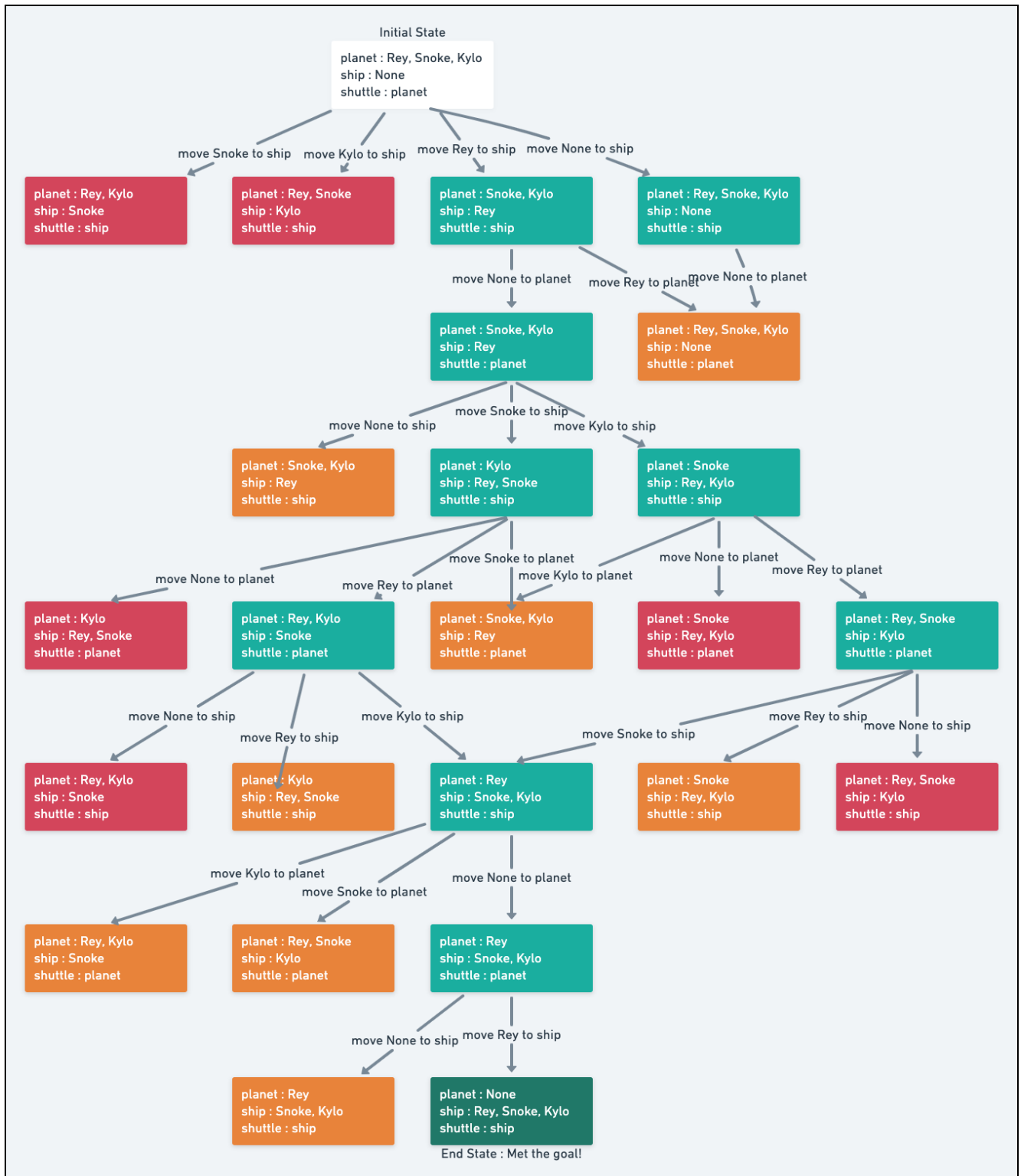


Figure 2—Entire semantic network showing the solution

QUESTION 2

2.1 GDPR Research

Personal data is defined in the GDPR as “any information relating to an identified or identifiable natural person (‘data subject’); an identifiable natural person is one who can be identified, directly or indirectly, in particular by reference to an identifier such as a name, an identification number, location data, an online identifier or to one or more factors specific to the physical, physiological, genetic, mental, economic, cultural or social identity of that natural person¹”. According to this definition, if there is any UX personalization work (e.g., recommendation, serving ads) that is based on identifying one individual using a unique and distinctive identifier in the system, it will be within the scope of this regulation.

Firstly, to keep personalized user experience, according to the regulation, the company needs to provide notice to users and explain how the personal data will be used and why, and receive an unambiguous consent from the user. Getting the user consent is especially important in collecting children’s data (e.g., under 16 years of age in Europe) or automatically profiling users for decisions that can have a legal or other significant effect on the users. In these cases, the company should get additional consents as required by GDPR (e.g., legal guardians’ consents for children, additional consent for automated profiling)

Secondly, the personal data should be portable. For example, users should be able to download their personal data, and transfer their data from one service to another.

Thirdly, the company should now clearly state how long the personal data will be retained. Retention plan here would include the deletion of personal data when the retention period ends.

Fourthly, if the data processing has a high privacy risk, it needs to go through a “Data Protection Impact Assessment” to ensure a careful design to protect user privacy and mitigate the risk.

¹ Article 4 Definition (1) of GDPR Regulation
<https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32016R0679>

2.2 Example service where personalization is deeply embedded in functional purpose or business model

I firstly thought about YouTube because of its very strong recommendation engine, but I decided to not use it as an example here, because even without the recommendation, users can still use YouTube to search for a video they want. In this sense, YouTube was quite similar to the Amazon example in the problem.

Instead, I think social network services such as Facebook, Twitter, Instagram are services that cannot exist without personalization by definition. These social network services must have a customized feed for each user based on that user's friends network. This means these companies would have a way to internally identify a person and then also have means to follow who has befriended with whom (e.g., social graph).

2.3 Implications with EEA

According to the Eurostat webpage², the European Economic Area consists of the Member States of the European Union and three countries of the European Free Trade Association: Iceland, Liechtenstein and Norway; excluding Switzerland.

And according to the Brexit Law website³, based on the EEA Agreement, when an EU law is passed and if it also applies in the EEA on top of EU, it will be marked "Text with EEA relevance".

GDPR documentation has "Text with EEA relevance" in its first page, so I believe this would mean that all articles of GDPR including Article 32 about user consent, Article 38 about Children's data, and Article 39 of users' right to access and understand the processing of personal data, would apply to EEA countries as well.

²

[https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Glossary:European_Economic_Area_\(EEA\)](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Glossary:European_Economic_Area_(EEA))

³

<https://brexit.law/2016/07/06/efta-and-the-eea-what-are-they/#:~:text=The%20EEA%20Agreement%2C%20which%20came,and%20Norway%20on%20the%20other.&text=When%20an%20EU%20law%20is,also%20applies%20in%20the%20EEA.>

2.4 Evaluation for social network companies in EEA

For the social network services such as Facebook, Twitter, and Instagram to adapt to GDPR, they would need to change their practices to be GDPR compliant. For example, they would need to get a clear user consent to collect personal data, make the data portable by user, have a clearly defined retention and wipe out plan of user personal data, and develop a comprehensive privacy design documentation for any high risk products.

Assuming, it is legally possible to have users waive their GDPR rights, it would be impossible to allow users in the EEA to use these tools without waiving their GDPR rights because GDPR applies to EEA countries as well. Even if there can be some jurisdiction issues in reality in the EEA countries, these EEA-based users might have friends in EU countries in their Facebook, Twitter, Instagram accounts, and then it clearly falls under the jurisdiction of GDPR.