

### **Guided Notes and Activity Worksheet**

**LIST** some example applications of Reinforcement Learning.

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#### **Today's Agenda:**

1. Reward Functions
2. Case Study: RideShare
3. John Rawls & the Least Well Off
4. Return to Case Study

#### **Least Well Off**

*We are to compare schemes of cooperation by seeing how well off the least advantaged are on each scheme, and then to select the scheme under which the least advantaged are better off than they are on any other scheme. – Rawls (2001). pp. 59-60*

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#### **CASE STUDY: RideShare**

You have been tasked with working on an RL algorithm that will set dynamic prices for rides on a RideShare app.

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**CASE STUDY: RideShare**

You have been tasked with working on an RL algorithm that will set dynamic prices for rides on a RideShare app.

**STATE:** Current prices as a function of distance, location, time, and current demand.

**ACTION:** Set the new prices (still as a function of distance, location, time, and current demand).

**Utility #1: Maximize \$\$ Paid to the Company**

A. Whose interests are favored? Are anyone's interests disfavored, neglected, or ignored?

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B. Is there any information you might need to answer (A) that you don't have? Even if we acknowledge that some information will be in principle difficult or even impossible to obtain, is there anything you or the company could do in order to obtain some of the relevant information?

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C. Do you think this metric is a good one? Why or why not?

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**CASE STUDY: RideShare**

You have been tasked with working on an RL algorithm that will set dynamic prices for rides on a RideShare app.

**STATE:** Current prices as a function of distance, location, time, and current demand.

**ACTION:** Set the new prices (still as a function of distance, location, time, and current demand).

**Utility #2: Maximize \$\$ Paid to Drivers per Hour**

A. Whose interests are favored? Are anyone's interests disfavored, neglected, or ignored?

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B. Is there any information you might need to answer (A) that you don't have? Even if we acknowledge that some information will be in principle difficult or even impossible to obtain, is there anything you or the company could do in order to obtain some of the relevant information?

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C. Do you think this metric is a good one? Why or why not?

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**CASE STUDY: RideShare**

You have been tasked with working on an RL algorithm that will set dynamic prices for rides on a RideShare app.

**STATE:** Current prices as a function of distance, location, time, and current demand.

**ACTION:** Set the new prices (still as a function of distance, location, time, and current demand).

**Utility #3: Maximize Total Rides Provided Per Hour**

A. Whose interests are favored? Are anyone's interests disfavored, neglected, or ignored?

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B. Is there any information you might need to answer (A) that you don't have? Even if we acknowledge that some information will be in principle difficult or even impossible to obtain, is there anything you or the company could do in order to obtain some of the relevant information?

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C. Do you think this metric is a good one? Why or why not?

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**CASE STUDY: RideShare**

You have been tasked with working on an RL algorithm that will set dynamic prices for rides on a RideShare app.

**STATE:** Current prices as a function of distance, location, time, and current demand.

**ACTION:** Set the new prices (still as a function of distance, location, time, and current demand).

**Utility #4: Minimize Distance Traveled by Drivers**

A. Whose interests are favored? Are anyone's interests disfavored, neglected, or ignored?

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B. Is there any information you might need to answer (A) that you don't have? Even if we acknowledge that some information will be in principle difficult or even impossible to obtain, is there anything you or the company could do in order to obtain some of the relevant information?

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C. Do you think this metric is a good one? Why or why not?

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