

C:145 Artificial Intelligence@

Uncertainty

Readings: Chapter

Russell & Nor

Logic and Uncertainty

One problem with logical-agent approaches:

Agents almost never have access to the whole truth about their environments.

- Very often, even in simple worlds, there are important questions for which there is no boolean answer.
- In that case, an agent must reason under **uncertainty**.
- Uncertainty also arises because of an agent's incomplete or incorrect understanding of its environment.

Uncertainty

Let action L_t = “leave for airport t minutes before flight”.

Will L_t get me there on time?

Problems

- partial observability (road state, other drivers' plans, etc.)
- noisy sensors (unreliable traffic reports)
- uncertainty in action outcomes (flat tire, etc.)
- immense complexity of modelling and predicting traffic

Hence a purely logical approach either

1. risks falsehood (“ A_{25} will get me there on time”), or
2. leads to conclusions that are too weak for decision making (“ A_{25} will get me there on time if there's no accident on the way, it doesn't rain, my tires remain intact