<CAPS>

Session 6 – Conclusion & Guest Lecture with Professor Sarah Sewall

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Design Challenges of Autonomous Systems

Environment =

Contested, difficult terrain, civilian infrastructure

Agent =

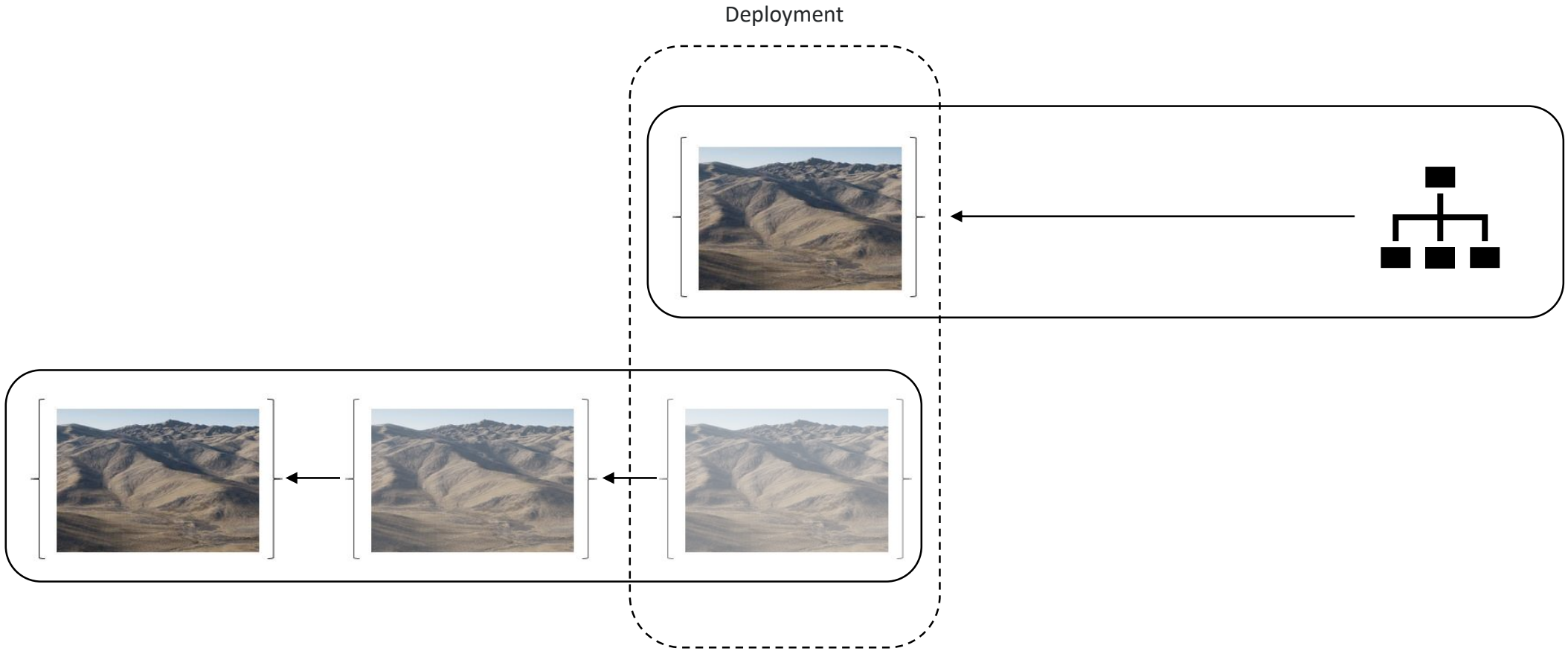
Fully autonomous

Semi-autonomous

Human

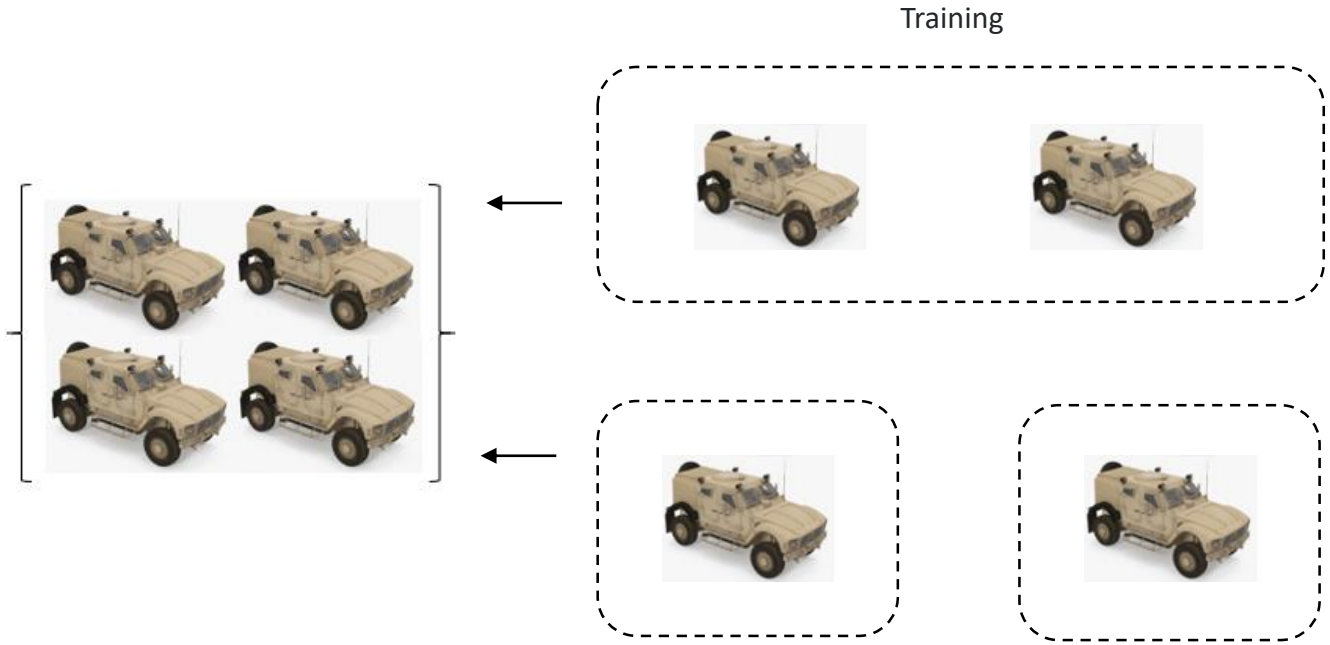
Model-Based v. Model-Free Learning

> If we elect to have a fully autonomous convoy, should our algorithm be model-based or model-free? What are the risks and opportunities involved in each?



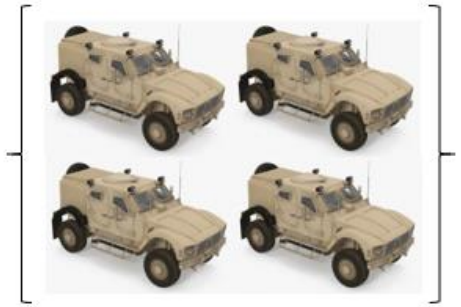
Multi-Agent Learning

> If we elect to have a semi-autonomous convoy, mixing in human-driven vehicles, how would we handle the different learning processes and ensure integration? What are the risks and opportunities posed by each of the proposed solutions?



Making Policy Recommendations

> Given the above, what option would you recommend to the deputy commanding officer?



Fully autonomous

Semi-autonomous

Human

Assessing Agent-Environment Interaction

> Say we elect to pursue a semi-autonomous convoy (to increase the breadth of ability, adaptability, etc.). The environment, being contested and variably controlled by different groups, may change quickly.

> What are the chief forms of failure we need to prepare for (i.e. failure modes)?

> The commander has heard that autonomous systems of this sort can take unpredictable actions, something to do with mapping their landscape. Is this a risk in our situation? In layman's terms, why or why not?

Guest Lecture with

Professor Sarah Sewall

Thank you for being part of CAPS!

Let‘s keep in touch…