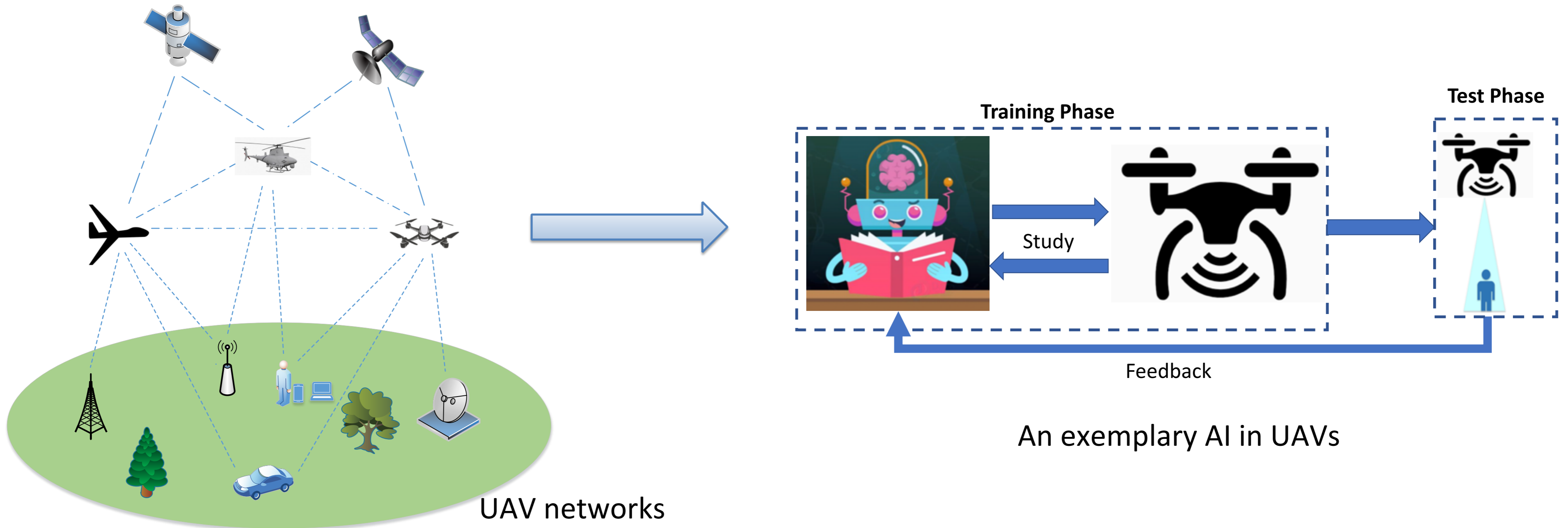


AI in UAVs: The impact of information exchange on multi-UAV networks

Focus: UAV communication assessment using stochastic games and MARL



We can't answer important questions: How AI is shaping UAV intelligence, autonomy in wireless communications?

EXAMPLE: Recent applications

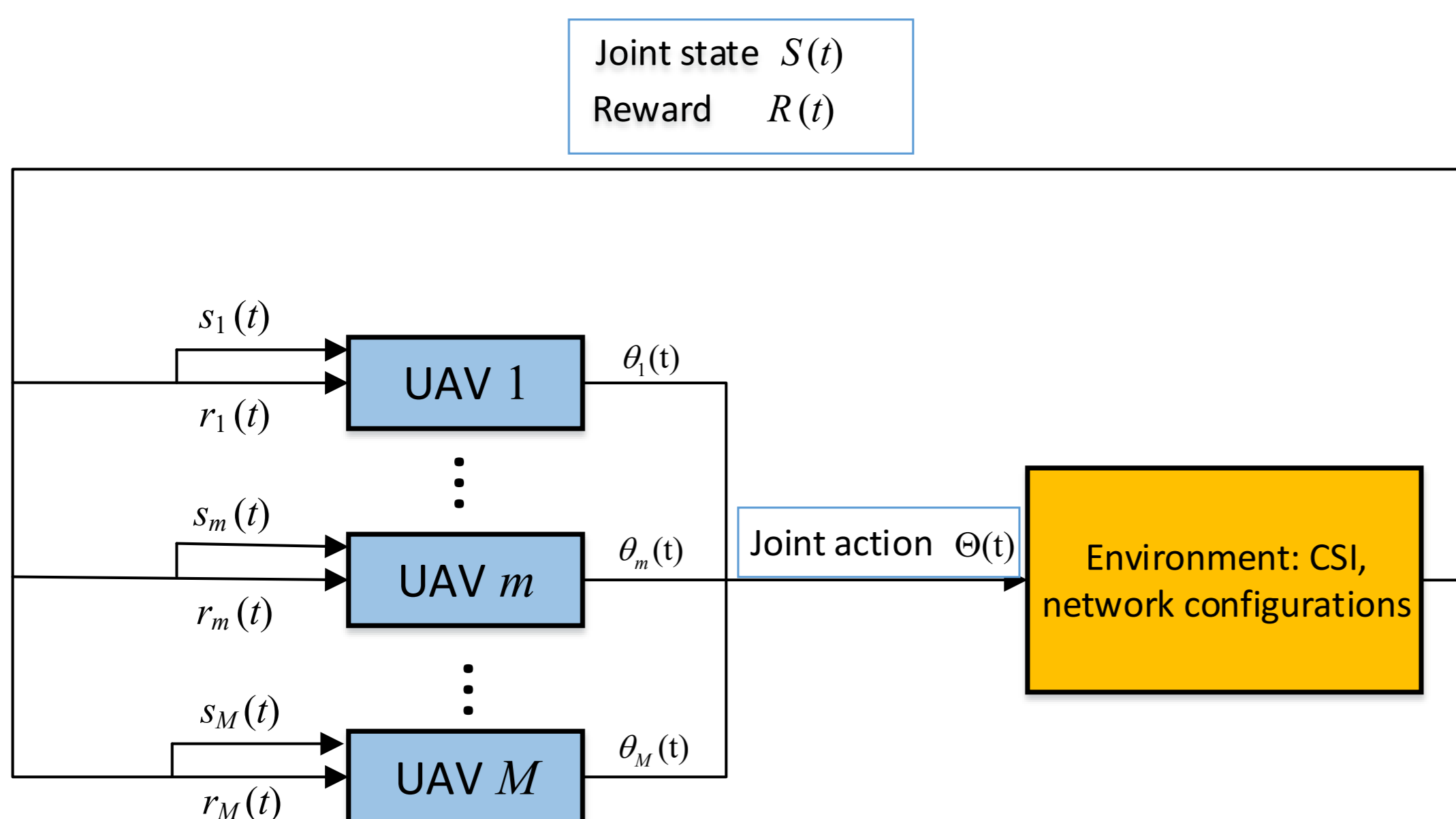


What does this mean? We want to know things like:

- How to use AI algorithms to help UAV communications – due to mobility and flexible mission definition.
- How do UAVs manage resource allocation using human-like thinking?
- How to quantify the ability of cooperation among UAVs?

It's all about 'smart learning' not 'fixed solutions'

For multi-UAV networks, reliable communication missions are desirable due to dynamic environment uncertainties. We adopt correlated models - **stochastic games** - that incorporate joint strategies with whatever operating environments are available. These provide more powerful insights and better decision making than is possible from definite models.



A MARL based UAV network diagram

- Multi-agent reinforcement learning (MARL)** provides a distributed perspective on the intelligent resource management for multi-UAV networks. The benefits of MARL:
- Local information exchanges between UAVs can be modeled and investigated;
 - Difficulties in modelling and computation can be handled in distributed manners.