E. Create the Bayesian Strategy
Networks (BSN) through Deep
Reinforcement Learning (DRL) get
the Optimal Strategy Combination.

D. Build Game-theoretic Utility Tree (GUT)

Organizing more
Complex Relationships
for cooperative MAS
Decision-Making
In Explore Domain.

B. Discuss *Needs-driven* Task Assignments for MAS/MRS Cooperation in *USAR* Missions.

A. Introduce SASS with Robot Needs Hierarchy, Negotiation-Agreement Mechanism, and Atomic Operations.

hips
AS

g

Safety Requirements

Capability Requirements

Energy Time etc.

Robot Needs Hierarchy

Capability Requirements

Energy Time etc.

Luman-safe control etc.

Agent 1

Agent 3



Agent 8



Agent 10

Agent 7



C. Define the Relative Needs
Entropy (RNE) as the Trust
Assessment Model in
MAS/MRS Cooperation
Optimizing Agents' Grouping
Strategy and Achieving better
Performance in Uncertain
and Adversarial Environments.



Agent 4



Agent 2

Group 2



Agent 9

