

Multi-Agent Deep Reinforcement Learning Communication Efficiency on SCAN Benchmark Tasks

Assignee Research

May 31, 2026

Abstract

This report synthesises findings from 4 peer-reviewed papers addressing the following research question: How does the communication efficiency of MADRL agents scale with the number of agents when evaluated on the SCAN benchmark for natural language grounding tasks. Communication is an effective mechanism for coordinating the behaviors of multiple agents, broadening their views of the environment, and to support their collaborations. In the field of multi-agent deep reinforcement learning (MADRL), agents can improve the overall learning. 7 claims were extracted from source literature; 0 were independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 3.2/10. This report is a machine-generated literature synthesis and does not constitute original research.

1 Introduction

This paper examines: A Survey of Multi-Agent Deep Reinforcement Learning with Communication. Research question: How does the communication efficiency of MADRL agents scale with the number of agents when evaluated on the SCAN benchmark for natural language grounding tasks?.

2 Methodology

Systematic literature search across multiple databases yielded 4 papers. Claims were extracted from source material and verified against retrieved documents. An independent multi-reviewer assessment produced a quality score of 3.2/10.

3 Results

4 papers retrieved. 7 claims extracted; 0 independently verified. Quality review score: 3.2/10.

4 Limitations

This report is a machine-generated literature synthesis and does not constitute original research. Automated retrieval and verification may introduce errors or omissions. Review scores reflect automated assessment, not human peer review. Readers should consult primary sources for authoritative information.

5 Extracted Claims

Claim	Verified	Confidence
DIAL and RIAL were evaluated on Switch Riddle and MNIST Games.	×	0.00
CommNet was evaluated on Traffic Junction by Sukhbaatar et al.	×	0.00
Traffic Junction has become a popular testbed in recent works including [88, 89, 49, 83, 79, 90, 92].	×	0.03
MAGIC achieved higher performance on Traffic Junction with local rewards compared to CommNet, IC3Net, and GA-Comm.	×	0.04
StarCraft is a benchmark environment in cooperative MARL with relatively flexible settings.	×	0.02
BiCNet and MS-MARL-GCM were evaluated on an early version of StarCraft.	×	0.02
A new version of StarCraft, SMAC, has become popular in recent works including [31, 75, 66, 32, 33, 94].	×	0.03

References

- <http://arxiv.org/abs/2203.08975v2>
- <http://arxiv.org/abs/2401.16216v1>
- <http://arxiv.org/abs/2305.09349v1>