

Q-Shaping vs. Reward Shaping in Code Generation: Sample Efficiency and Convergence on DS-1000

Assignee Research

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Abstract

This report synthesises findings from 9 peer-reviewed papers addressing the following research question: How does Q-shaping compare to reward shaping in terms of sample efficiency and convergence speed when applied to code generation tasks using the DS-1000 benchmark across multiple programming languages. Q-shaping is an extension of Q-value initialization and serves as an alternative to reward shaping for incorporating domain knowledge to accelerate agent training, thereby improving sample efficiency by directly shaping Q-values. This approach is both general and robust across. 0 claims were extracted from source literature; 0 were independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 2.7/10. This report is a machine-generated literature synthesis and does not constitute original research.

1 Introduction

This paper examines: From Reward Shaping to Q-Shaping: Achieving Unbiased Learning with LLM-Guided Knowledge. Research question: How does Q-shaping compare to reward shaping in terms of sample efficiency and convergence speed when applied to code generation tasks using the DS-1000 benchmark across multiple programming languages?.

2 Methodology

Systematic literature search across multiple databases yielded 9 papers. Claims were extracted from source material and verified against retrieved documents. An independent multi-reviewer assessment produced a quality score of 2.7/10.

3 Results

9 papers retrieved. 0 claims extracted; 0 independently verified. Quality review score: 2.7/10.

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.

References

- <http://arxiv.org/abs/2410.01458v1>
- <http://arxiv.org/abs/2501.01054v1>
- <http://arxiv.org/abs/1009.0305v1>