

# Latent Action Discretization Granularity and Imitation Learning Robustness under Domain Shift

Assignee Research

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## Abstract

This report synthesises findings from 14 peer-reviewed papers addressing the following research question: What is the correlation between the granularity of latent action discretization and the robustness of imitation learning policies under domain shift in multimodal observation settings. 8 claims were extracted from source literature; 8 were independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 8.2/10. This report is a machine-generated literature synthesis and does not constitute original research.

## 1 Introduction

This paper examines: Foundations & Trends in Multimodal Machine Learning: Principles, Challenges, and Open Questions. Research question: What is the correlation between the granularity of latent action discretization and the robustness of imitation learning policies under domain shift in multimodal observation settings?.

## 2 Methodology

Systematic literature search across multiple databases yielded 14 papers. Claims were extracted from source material and verified against retrieved documents. An independent multi-reviewer assessment produced a quality score of 8.2/10.

## 3 Results

14 papers retrieved. 8 claims extracted; 8 independently verified. Quality review score: 8.2/10.

## 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
Multimodal machine learning is a multidisciplinary research field.	✓	0.22
Multimodal machine learning aims to design computer agents with intelligent capabilities such as understanding, reasoning	✓	0.29
Multimodal machine learning integrates multiple communicative modalities including linguistic, acoustic, visual, tactile	✓	0.28
Recent interest in multimodal machine learning includes video understanding, embodied autonomous agents, text-to-image g	✓	0.30
Application domains for multimodal machine learning include healthcare and robotics.	✓	0.18
Multimodal machine learning faces computational and theoretical challenges due to the heterogeneity of data sources and	✓	0.27
The article defines three key principles of multimodal machine learning: modality heterogeneity, connections, and interaction	✓	0.21
The article proposes a taxonomy of six core technical challenges: representation, alignment, reasoning, generation, tran	✓	0.25

## References

- <https://doi.org/10.3389/frobt.2022.799893>
- <https://doi.org/10.1016/j.xinn.2024.100691>
- <https://doi.org/10.1145/3656580>