

Experimental Results

Performance on benchmark datasets

Method	Error	
	MIT/Berkley	Harvard
CNN	34.95	28.54
Our model	20.75	21.28

Comparison with related work

Method	Error	
	MIT/Berkley	Harvard
GVA [182]	32.09	33.23
SIFS [6]	22.92	37.24
Our model	20.75	21.28

Conclusions

- Introduce a hybrid vision model based on combining model-based vision with learning based vision through deep integration of prior knowledge with data
- Propose two sources of prior knowledge: target knowledge and computer vision models
- Introduce methods to integrate prior knowledge into different stages of deep learning models
- Experiments demonstrate the hybrid model can significantly reduce data dependencies (even zero-shot learning), improve performance, in particular across dataset performance, and robustness, and improve model interpretability.