

Robot Cognition using Bayesian Symmetry Networks

*Anshul Joshi, Thomas C. Henderson and
Wenyi Wang
University of Utah*

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School of Computing
University of Utah
Salt Lake City, UT 84112 USA

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Abstract

Leyton proposed a generative theory of shape, and general cognition, based on group actions on sets as defined by the wreath product. Our position expressed here is that this approach can provide a strong basis for robot cognition when:

1. tightly coupled to sensorimotor data and analysis,
2. used to structure both general concepts and specific instances, and
3. combined with a probabilistic framework (Bayesian networks) to characterize uncertainty.

We describe a roadmap to achieve these and provide some evidence of feasibility.

References

- [1] M. Leyton. *A Generative Theory of Shape*. Springer, Berlin, 2001.