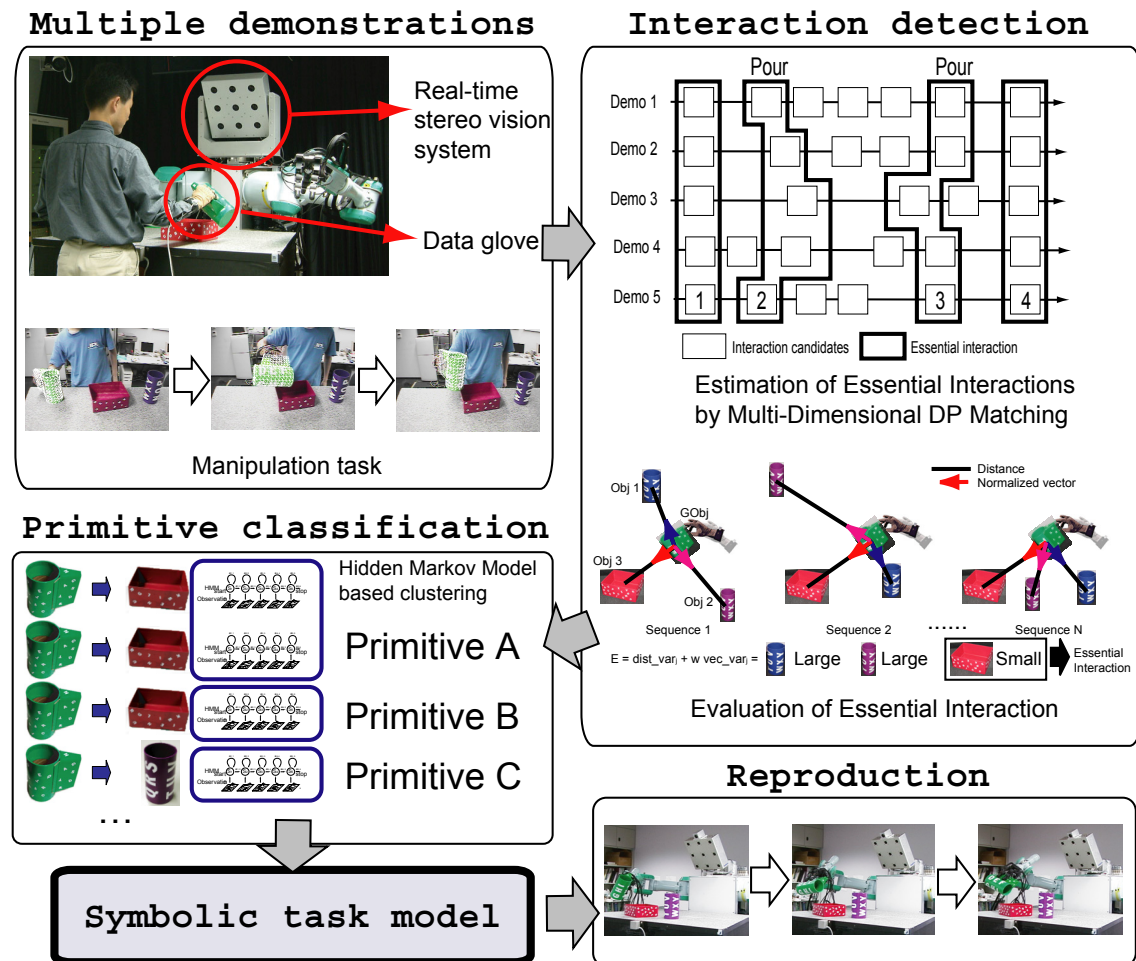


Generating a Symbolic Task Model from Multiple Demonstrations

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Most of the approaches to "Learning from Observation" so far assume that a demonstration can be well understood from a single demonstration. But a single demonstration contains ambiguity, in that interactions which are essential to complete a task can't be discerned without prior task dependent knowledge, which should be obtained from observation. To address these issues, we propose a technique to integrate multiple observations of demonstrations and estimate essential interactions automatically. The demonstrations differ, but indicate virtually a same task. The shared interactions among all the demonstrations are considered to be essential and a task model is generated from them. Detected essential interactions are further clustered to form a set of primitive symbols and a symbolic task model is generated. Finally, the robot reproduces the same task based on the task model even in different environment.



Publications

- [1] K. Ogawara, J. Takamatsu, H. Kimura and K. Ikeuchi: **Generation of a Task Model by Integrating Multiple Observations of Human Demonstrations along Time Series**, IPSJ Transactions on Computer Vision and Image Media, pp.117-126 vol. 43 No. SIG 4 2002
- [2] K. Ogawara, J. Takamatsu, H. Kimura and K. Ikeuchi: **Modeling Manipulation Interactions by Hidden Markov Models**, IROS 02, pp 1096-1101, 2002.