

UNIVERSITY OF SOUTH FLORIDA

Defense of a Doctoral Dissertation

Generating Robotic Manipulation Motions by Learning from Human Demonstrations

by

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For the Ph.D. degree in Computer Science & Engineering

The dissertation describes approaches that teach robots how to generate manipulation motions to accomplish daily-living tasks using demonstrations collected from the human. The first approach generates fine motions using functional principal components, while the second approach generates motions for accurate manipulations using recurrent neural networks. It has been evaluated on pouring and achieved higher accuracy and generalizability than existing approaches.

Examining Committee

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THE PUBLIC IS INVITED

Publications

- (1) Y. Huang and Y. Sun, "Accurate Liquid Pouring: Learning and Generalization", submitted to IEEE Transactions on Robotics (T-RO) in February 2019.
- (2) Y. Huang and Y. Sun, "A Dataset of Daily Interactive Manipulation", accepted to International Journal of Robotics Research (IJRR), under minor revision.
- (3) Y. Huang and Y. Sun, "Learning to Pour", IROS 2017, pp. 7005-7010.
- (4) Y. Huang, M. Bianchi, M. Liarokapis and Y. Sun, "Recent Datasets on Object Manipulation: A Survey", Big Data. December 2016, 4(4): 197-216.
- (5) D. Paulius, Y. Huang, R. Milton, W. D. Buchanan, J. Sam and Y. Sun, "Functional object-oriented network for manipulation learning," IROS 2016, pp. 2655-2662.
- (6) Y. Huang and Y. Sun, "Generating manipulation trajectory using motion harmonics", IROS 2015, pp. 4949-4954.

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