Dear Professor Wang,

We would like to re-submit our paper “Learning transferable kinematic models of the motions of manipulated objects”. We have completed the revisions requested in Dr Santos’ email of February 2014. We understand that because we have taken longer than the allocated time you may treat it as a new submission.

During this period we have completely rewritten the paper from beginning to end to meet all the reviewers’ requirements. We thank the reviewers for their genuinely useful comments, which we followed closely, and which have resulted in an improved manuscript of reduced length. We detail below the ways that we addressed the reviewers’ comments.

1. We have rewritten the sections on our learning algorithms, and given the prediction algorithm as pseudo-code in order to present them in a clearer manner. (Review 1)
2. We have rewritten explanations of the parameter space and the training and testing regime. (Review 4)
3. We have shortened the experimental results by a page. We have removed more minor results, leaving only the most representative, while giving more explanation of why the results are as they are. (Reviews 1,4)
4. We have polished the presentation throughout, removing typographical errors. (Reviews 1,4)
5. We have revised the conclusion as requested, removing the experimental summaries, and replacing these with a discussion of the space of possible solutions to the prediction problem, putting our work in a larger context. (Reviews 1,5)
6. We have given the paper a new Section II to explain the problem informally and thus make the paper more accessible. It also outlines and motivates our overall learning scheme. We emphasise the importance of modularity in our scheme. (Reviews 1, 3, 4)
7. We have redrawn all the diagrams so that they better integrate with the text and support the flow of the argument. We have also redrawn the graphs as requested to use a different symbol for each algorithm. (Review 4)
8. We have rewritten the experimental discussion to show how the results support the hypotheses. (Review 4)
9. We have explained why transfer performance can degrade on real objects. (Review 4)
10. Subject to space constraints we have thoroughly reviewed earlier work in modelling of push manipulation, and related areas. We discuss where our work sits in relation to the literature: relative to modular motor learning in neuroscience, analytic approaches to push modelling, qualitative approaches, results in push planning/manipulation. We mention a key finding from the child development literature. (Reviews 4,5)
11. We note that all the reviewers scored us down for length. We therefore shortened the paper by one page, removing unnecessary detail to make it more understandable. (Reviews 1-5)

We note that reviewer 2 pointed out that the work could be improved by modelling dynamics explicitly. While we agree with this, what we have presented is a new and substantially different approach to push modelling and we consider dynamics modelling future work. We thank you for your consideration, and look forward to your feedback.

Yours sincerely

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