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Submission Summary

Paper ID:	20
Title:	Robot Learning Simultaneously a Task and How to Interpret Human Instructions
Abstract:	This paper presents an algorithm to bootstrap shared understanding in a human-robot interaction scenario where the user teaches a robot a new task using teaching instructions yet unknown to it. In such cases, the robot needs to estimate simultaneously what the task is and the associated meaning of instructions received from the user. For this work, we consider a scenario where a human teacher uses initially unknown spoken words, which associated unknown meaning is either a feedback (good/bad) or a guidance (go left, right, ...). We present computational results, within an inverse reinforcement learning framework, showing that: a) it is possible to learn the meaning of unknow and noisy teaching instructions, as well as a new task at the same time, b) it is possible to reuse the acquired knowledge about instructions for learning new tasks and c) even in the case where the robot initially knows some of the instructions' meanings, the use of extra unknown teaching instructions improves learning efficiency.
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Authors:	Jonathan Grizou , *jonathan.grizou@inria.fr* Manuel Lopes , *manuel.lopes@inria.fr* Pierre-Yves Oudeyer , *pierre-yves.oudeyer@inria.fr*
Primary Contact:	Jonathan Grizou , *jonathan.grizou@inria.fr*
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Conflicts of Interest:	Pierre-Yves Oudeyer , INRIA Bordeaux Sud-Ouest *pierre-yves.oudeyer@inria.fr* Manuel Lopes , INRIA Bordeaux *manuel.lopes@inria.fr*
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