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**Title:**

Mode Switch Assistance To Maximize Human Intent Disambiguation

**Abstract:**

In this paper, we develop an algorithm for intent inference via goal disambiguation with a shared-control assistive robotic arm. Assistive systems are often required to infer human intent and this often is a bottleneck for providing assistance quickly and accurately. We introduce the notion of inverse legibility in which the human-generated actions are legible enough for the robot to infer the human intent confidently and accurately. The proposed disambiguation paradigm seeks to elicit legible control commands from the human by selecting control modes, for the robotic arm, in which human-directed motion will maximally disambiguate between multiple goals. We present simulation results which look into the robustness of our algorithm and the impact of the choice of confidence functions on the performance of the system. Our simulations results suggest that the choice of confidence function is a critical factor in determining the disambiguation algorithm's capability to capture human intent. We also present a pilot study that explores the efficacy of the algorithm on real hardware with promising preliminary results.

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**Authors:**Deepak Edakkattil Gopinath , [deepakedakkattilgopinath2015@u.northwestern.edu](mailto:deepakedakkattilgopinath2015@u.northwestern.edu)Brenna Argall , [brenna.argall@northwestern.edu](mailto:brenna.argall@northwestern.edu)**Primary Contact:**Deepak Edakkattil Gopinath , [deepakedakkattilgopinath2015@u.northwestern.edu](mailto:deepakedakkattilgopinath2015@u.northwestern.edu)**Uploaded Files:**

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