

論文の内容の要旨

論文題目 Teaching AI through Object Demonstrations and Language
Instructions(物体教示と言語指示によるAI学習)

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AI has proven to be highly effective in addressing a multitude of research challenges. However, the development of AI solutions for specific applications still demands specialized expertise and substantial resources. This phenomenon limits the width of AI impact: only a small number of AI professions can leverage and customize AI as intelligent tools for solve their problem.

The main cause of this issue lies in the lack of interactive systems that enable humans to intuitively teach AI. To facilitate a natural interaction between non-expert users and an interactive system, humans should be able to perform teaching behaviors similar how they are engaged in normal social events.

In this dissertation, I focus on investigating two interaction techniques in the teaching events: 1) demonstrations and 2) instructions. I built two interactive systems (i.e., LookHere and InstructPipe) that allow users to teach AI by performing object demonstrations and language instructions, respectively. LookHere leverages users' gestural interaction people naturally perform in their object demonstration process to predict the target object that users want to specify. InstructPipe enables users to start prototyping an AI pipeline in visual programming by text-based instructions. Both studies in the two projects reveal a significant workload drop when a system leverages humans' natural teaching capability. Qualitative results further show that the reduced perceived workload inspire more creative uses of the systems, and that visualization of the system prediction.