



DiLogics: Creating Web Automation Programs with Diverse Logics

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Category

Software

Software & Content

MOSS - Michigan Open Source Support

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OVERVIEW

Programming-by-demonstration system enables flexible, specification-driven web automation for knowledge workers

- Outperforms existing tools by handling diverse, input-dependent web task requirements using NLP segmentation
- Data entry, record updates, data scraping, and automated web-based order placement

BACKGROUND

Knowledge workers routinely perform repetitive web-based data entry tasks, such as updating records or placing orders, which are critical yet time-consuming and error-prone. Traditional web automation tools enable users to speed up these processes but typically execute fixed sequences of UI actions, struggling to adapt when task requirements or input conditions vary. As a result, users must either manually intervene or reconfigure automation scripts for each new task variation, limiting efficiency and accessibility, especially for non-programmers. There is a clear need for web automation methods that flexibly adapt to new input specifications and can be easily instructed by non-experts, empowering users to automate a wider range of web tasks without deep technical expertise or frequent rewrites.

INNOVATION

DiLogics introduces a novel programming-by-demonstration system that leverages natural language processing to simplify creating adaptable web automation programs. By semantically segmenting user input data into structured task steps and recording user demonstrations for each step, DiLogics enables the automation system to generalize demonstrated behaviors to new, semantically similar input conditions. This approach allows non-expert users to efficiently develop flexible web macros that adapt to a wide array of task requirements without coding. Real-world applications include customizable data entry across web portals, dynamic record updates, intelligent form filling, and web-based order automation. By translating input instructions into expressive automation logic, DiLogics significantly broadens access to robust web automation, increasing productivity and reducing manual effort for knowledge workers.

ADDITIONAL INFORMATION:

PROJECT LINKS:

DEPARTMENT/LAB:

- [Xinyu Wang, Computer Science and Engineering](#)

LICENSES: