

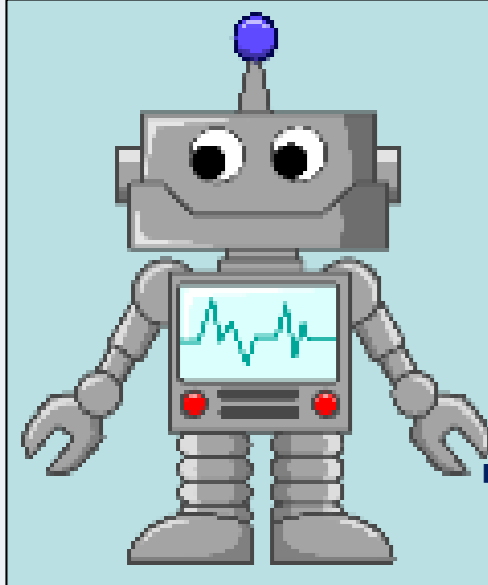
RecurBot: Learn to Auto-complete GUI Tasks from Human Demonstrations

Thanapong Intharah

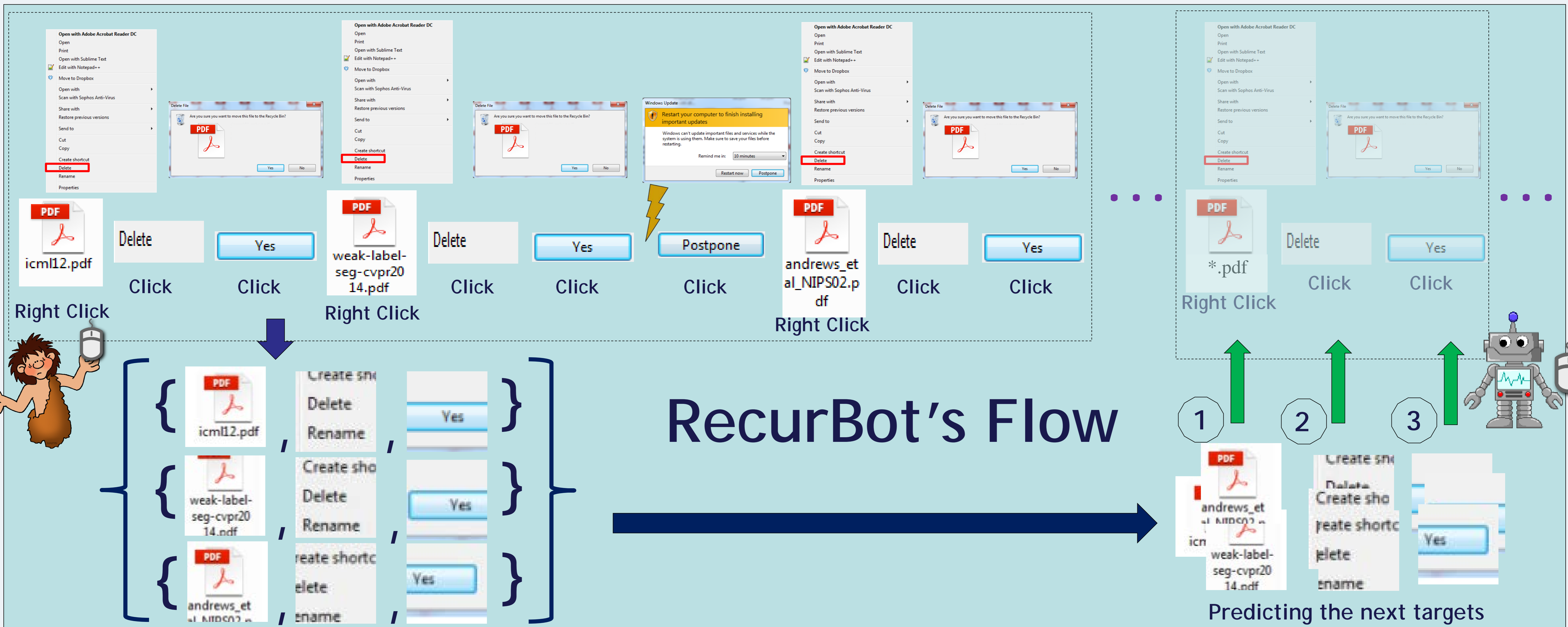
Michael Firman

Gabriel J. Brostow

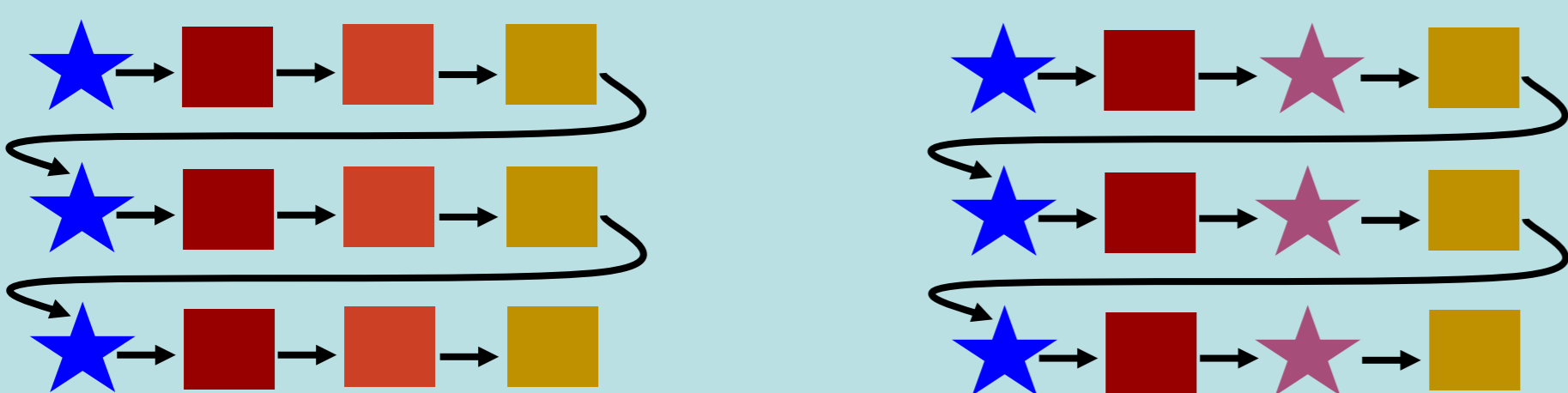
University College London



Show me how you do each loop a few times.
Then I auto-complete the full task for you, but I might ask you to approve a step when I'm unsure.



Loop Variations



Some actions have the same visual appearance on each loop -- we show these here as squares. This might include clicking the browser's 'back' button.

Other actions change appearance, and even location, on each loop. These are shown here as stars, to indicate intentional variations. RecurBot can correctly predict for both of these scenarios, and when actions are missing or added.

User Variations and Dataset Statistics

# sequences	Actions/Sequence	Actions/Loop
55	16.36	4.33
Missing/Sequence	Noisy/Sequence	% Seq Variation
0.29	0.65	38%

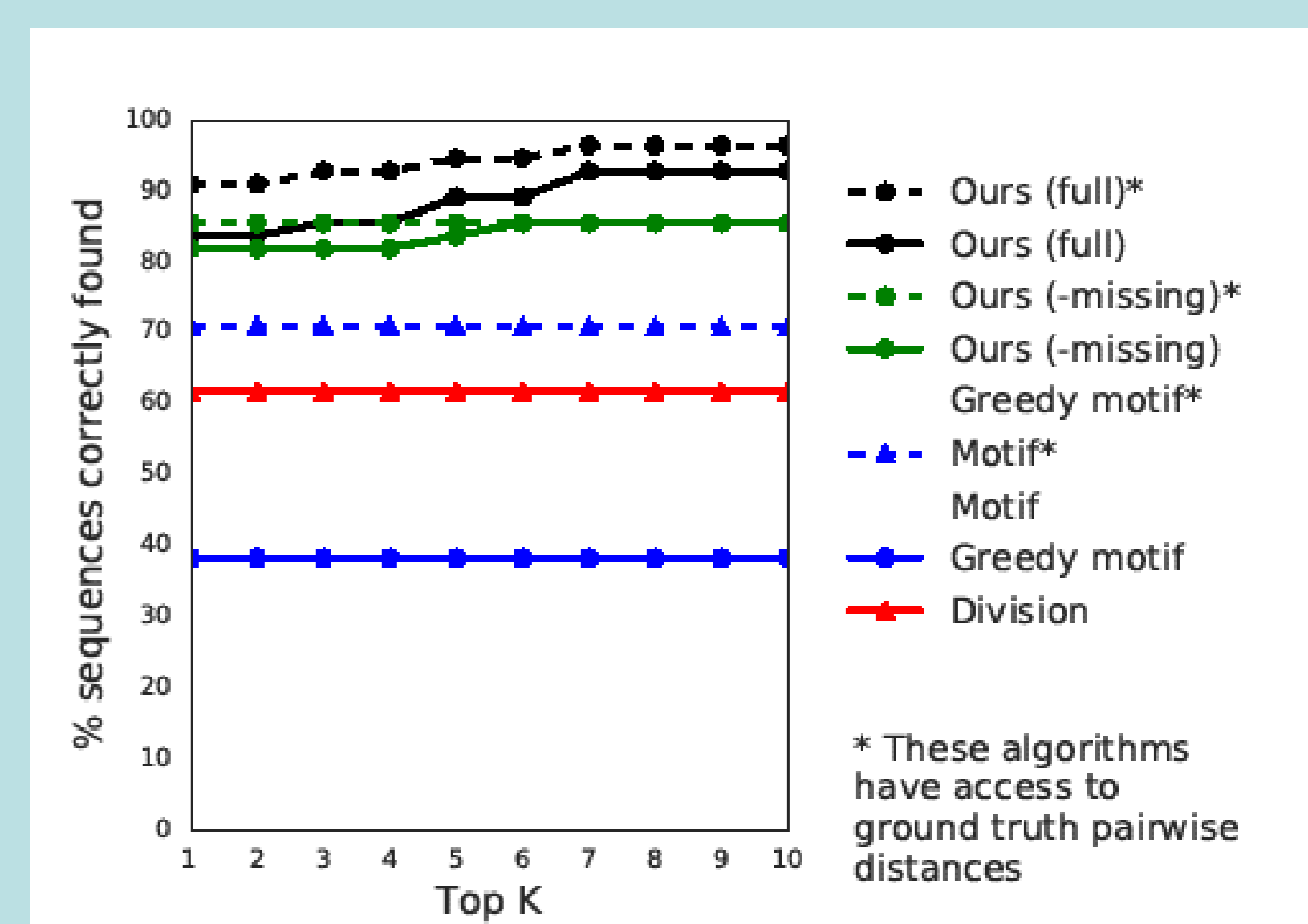
The user variations can be categorized into three classes:
(a) Missing actions, where the user omits a single step;
(b) Noisy actions between two subsequences, and
(c) Noisy actions within a subsequence.

Usability Study

USE Questionnaire Category	Score (7- Likert scale)
Usefulness	5.65 ± 0.36
Ease of Use	5.51 ± 0.30
Ease of Learning	6.05 ± 0.06
User Satisfaction	5.86 ± 0.14
Overall Average	5.70 ± 0.32

Ten users participated in this study: 7 females and 3 males, their ages varying between 24 to 40. They were asked to fill in the USE questionnaire. Participants agreed in the open ended comments, that "the system reduced tedium in completing recurrent work, is easy to learn and use, and gains users' trust by asking the users when a prediction is uncertain."

Performance of The Recurrent Action Recognition Algorithm



Limitations

- Does not monitor application state; RecurBot uses fixed delays to cope with processing time of application for each step.
- No explicit OCR.