Kevin Lam

- Hi, I’m Kevin and I’m a user experience researcher dedicated to finding ways to improve people’s lives by learning from their diverse perspectives and motivations.
- I maximize user experience by leveraging over 4 years of UX research experience in academia using mixed-methods approaches.

Background

Master of Science (M.Sc.) in Computer Science

- Specialized in Human-Computer Interaction (HCI)
- University of Saskatchewan (Graduated 2021)

Bachelor of Science (B.Sc.) in Chemical Engineering

- Specialized in Biomedical Engineering
- University of Calgary (Graduated 2015)

Skills

User Research:

- Quantitative research, qualitative research, games user research
- Usability testing, persona development, user interviews, A/B testing, surveys, physiological studies (e.g., EEG)
- In-person studies and remote studies

Programming:

- JavaScript, React.js, Node.js, R, Python, SPSS
- AWS, Amazon Mechanical Turk, Prolific

Personal:

- Fluent in English, Cantonese, and Japanese

Research Projects

Publication 1: The Effects of System Interpretation Errors on Learning New Input Mechanisms

- Authors: Kevin Lam, Carl Gutwin, Madison Klarkowski, Andy Cockburn
- Venue: CHI '21: Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems
- DOI: https://doi.org/10.1145/3411764.3445366

Publication 2: More Errors vs. Longer Commands: The Effects of Repetition and Reduced Expressiveness on Input Interpretation Error, Learning, and Effort

- Authors: Kevin Lam, Carl Gutwin, Madison Klarkowski, Andy Cockburn
- Venue: CHI '22: Proceedings of the 2022 CHI Conference on Human Factors in Computing Systems
- DOI: https://doi.org/10.1145/3491102.3502079

Pending Publication 3: The Effects of Visual Representation on User Accuracy and Risk Assessment for Visualizations of Predictive Model Outcomes

- Authors: Kevin Lam, Carl Gutwin, Debajyoti Mondal, Cody Phillips, et al.

P1: Effects of Interpretation Errors on Learning

Question: If you're just starting to learn how to use speech recognition software, but it keeps misinterpreting your commands, would you have a harder time to learn how to use the software?

Hypothesis: Interpretation errors by system will negatively impact a user's ability to learn.

Goals:

- Determine if interpretation errors make it more difficult to complete tasks quickly and accurately
- Determine if errors made it more difficulty with memorizing
- Determine if participants felt that it was harder to learn in the presence of errors

P1: Effects of Interpretation Errors on Learning

Methods:

- Developed an online user study in JavaScript where participants used a sequence of inputs to select targeted items
- Participants were trained to memorize the input sequences
- Artificial errors were injected into their inputs at various error rates
- Performance was measured by task completion time, rate of mistakes made by participants, subjective responses for ease of learning

Participants:

- 75 participants recruited online through Amazon Mechanical Turk
- Participants came from a wide age range with a wide range of computer proficiencies

P1: Effects of Interpretation Errors on Learning

Findings:

- Increasing rates of interpretation errors led to reduced learning and performance
- Interpretation errors cause users to make more mistakes on their own
- Immediate feedback that an error had occurred led to faster corrections
- Participants who experienced more errors put in more effort to complete the tasks

Takeaway:

- Interpretation errors has detrimental effects on user performance and learning, which can lead to users putting more effort into the tasks

P2: More Errors vs. Longer Commands

Question: If interpretation errors are negatively impacting user learning, can we use error-reducing techniques to improve the learning process?

Hypothesis: Using repeated input sequences will reduce errors, but may lead to increased effort for the user to learn the longer sequences.

Goals:

- Will increased length of input sequences lead to reduced performance and memorization?
- Are the error-reducing techniques effective?
- How do different error-reducing techniques compare in performance?
- Since these techniques do not completely remove the interpretation error, does the remaining errors still cause loss in performance?

P2: More Errors vs. Longer Commands

Methods:

- Developed an online user study in JavaScript where participants used a sequence of inputs to select a list of items in a specified order
- Participants were trained to memorize the input sequences
- Artificial errors were injected into their inputs at various error rates
- Performance was measured by task completion time, rate of mistakes made by participants, subjective responses for ease of learning
- Different conditions varied based on error-reducing techniques
  - No technique: A-B
  - Repeated sequence: A-B-A-B
  - Repeated input: A-A-B-B

P2: More Errors vs. Longer Commands

Participants:

- 171 participants recruited through Amazon Mechanical Turk
- Participants split into different conditions in a between-participants study (i.e., they never experienced any other condition other than their own)
- Participants were asked to comment on how much effort it felt to complete their tasks, what they thought of their own performance, and how difficult was it to memorize the input sequences

P2: More Errors vs. Longer Commands

Findings:

- There was no performance loss when using an error-reducing technique (i.e., longer sequences was not slower to complete the tasks)
- It was not harder to learn the longer sequences of the error-reducing techniques
- Repeated sequences were much easier to learn than any other error-reducing technique
  - However, increasing the length of repeated sequences, while beneficial for reducing error, caused losses in performance
- Error-reducing techniques can reduce the error low enough that there would be almost no negative effect on learning or performance

P2: More Errors vs. Longer Commands

Takeaway:

- Error-reducing techniques are feasible methods to reducing interpretation errors that can lead to better user performance and learning without requiring more effort from the user.