

Spreading Our Wings Beyond Falcon

Shreena Bhati

Academic Research Presentation

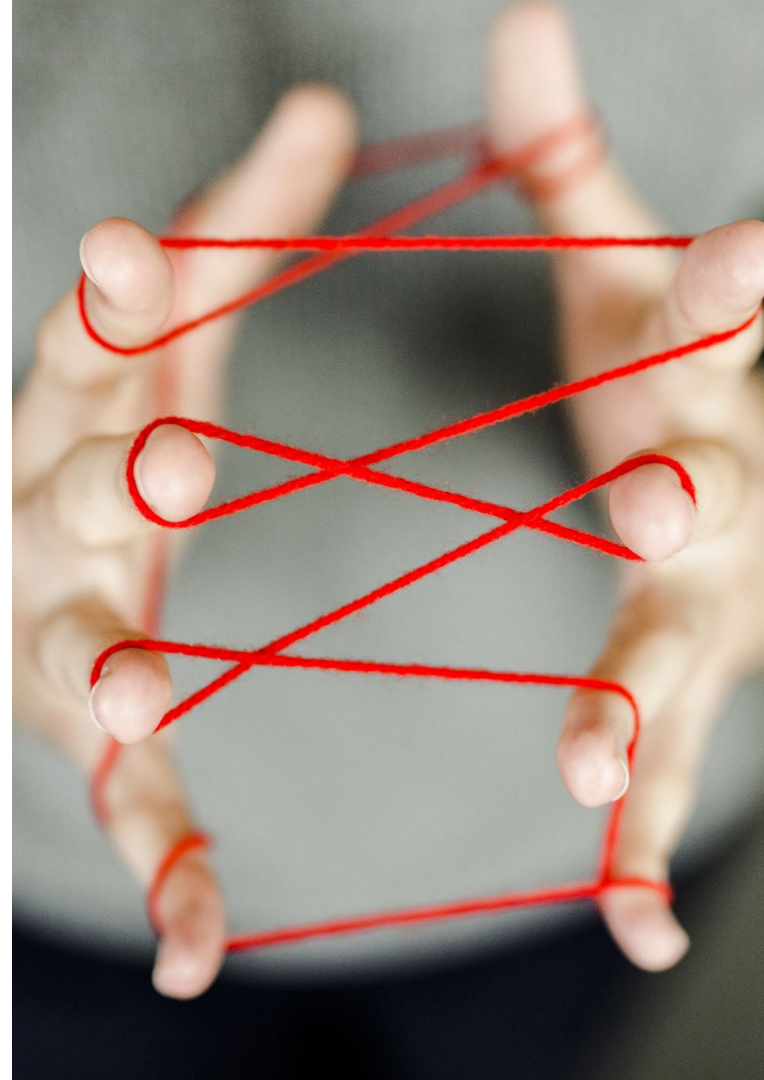


Summary

- Falcon seeks to reduce negative effects of exploring large datasets by enabling **exploration without time-consuming precomputation a.k.a. cold-start analytics.**
- Design influenced by how **humans are more latency-sensitive**, specifically with interactions like brushing and linking.
- Interactive visualization system that **optimizes interfaces and query systems together.**
- Prioritizes the compute resources to more latency-sensitive interactions to **increase their response-times**, there by supporting effective exploration.

Adaptive Learning and Personalization

- Integrate support for multi-modal interactions – voice commands, gestures and touch inputs.
- Machine Learning Algorithms that analyze and collect user data.
- They can track user preferences, behavior patterns, and efficiency in different modalities.
- ML techniques, like reinforcement learning or collaborative filtering, can be used to personalize the system's behavior.
- Offer recommendations on which modality might be more efficient for specific tasks or contexts.



Potential Use cases

1. **Modality Switching Recommendation (Switching Active Views)**

- *Scenario*: A user is exploring a large dataset with various linked visualizations. They primarily use touch interactions but often switch to voice commands for complex queries.
- *Personalized Recommendation*: The system observes that the user tends to switch to voice commands when dealing with complex queries. It might provide a pop-up suggestion like, "For complex queries, try using voice commands for faster interaction."

2. **Accessibility-Focused Recommendation (Zooming the Active View)**

- *Scenario*: A user with a visual impairment is interacting with the linked visualizations using a screen reader. They struggle with certain tasks.
- *Personalized Recommendation*: The system detects the user's screen reader usage and offers accessibility-focused recommendations, such as, "For detailed information, use the 'Read Details' command," or "You can navigate dimensions using voice commands."

3. **Learning from User Behaviour (Zooming the Active View)**

- *Scenario*: A user frequently switches between touch, voice, and gestures during their analysis. The system observes their behaviour over time.
- *Adaptive Learning*: After learning from the user's behaviour, the system identifies patterns. For instance, it notices that the user prefers voice commands when summarizing data. It adjusts its default mode to voice when summarization is detected.