University of Pittsburgh | School of Computing and Information

Dissertation Defense

Doctor of Philosophy in Information Science

"**Human-AI Collaboration in Search and Recommendation; Navigation, Personalization and Evaluation of Carousel-based Interfaces**" by **Behnam Rahdari**

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Committee:

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The design of interactive systems plays a pivotal role in how users search for, explore, and consume digital information. While recommendation algorithms have received considerable attention, the impact of user interaction design on engagement and decision-making has received limited attention.

This thesis addresses this gap by focusing on carousel-based interfaces, a widely used but insufficiently studied approach in interactive user interface design. We begin by developing theoretical models that capture key aspects of user interaction within carousels, including engagement dynamics, navigational effort, and learning behavior

These models inform a series of controlled experiments and simulations, where we evaluate how carousels influence search and recommendation tasks compared to traditional interfaces. We further investigate practical applications of carousels in real-world contexts, exploring how carousels can assist cancer patients and caregivers in navigating complex health information environments.

By connecting theoretical modeling with empirical evaluation, this thesis aims to advance the understanding of human-AI collaboration in interactive search and recommender systems.