

Mustafa Abualsaud

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Summary and Career Objective

PhD candidate (expected graduation summer 2021) in Information Retrieval/HCI with a focus on understanding, modeling, and visualizing user behavior with systems. Experienced in designing research experiments and using different statistical methods to confirm and generate hypotheses. Seeking a position that allows me to leverage my knowledge in user experience research, data science, and software development.

Education

University of Waterloo

PhD in Computer Science (Information Retrieval/HCI). Advisor: Mark Smucker.
Masters in Computer Science (Information Retrieval/HCI). Advisor: Mark Smucker.

Waterloo, ON, Canada
May 2017 - Summer 2021
Jan 2015 - April 2017

University of Victoria

Bachelors in Computer Science (Honors). Advisor: Alex Thomo.

Victoria, BC, Canada
May 2010 - April 2014

Experience

Graduate Research Assistant (Information Retrieval) | University of Waterloo

May 2017 - Current

Waterloo, ON, Canada

- Conducted various in-person and remote user experiments on desktop and mobile platforms using different research methods (e.g. eye-tracking, usability testing, click analysis, interviews).
- Built novel and holistic models to understand the effect of different search components on user experience while using web search engines.
- Created temporal-based visualization technique for visualizing searchers eye-gazing data on search pages.
- Used a variety of quantitative methods for in-lab and remote experiments to understand user experience.
- Published and communicated research work at Google and top scientific venues on information retrieval.
- Analyzed large amounts of user data to generate hypotheses and plans for research.
- Co-organized multiple Information Retrieval tasks in NIST Text Retrieval & Evaluation Conference (TREC).

Teaching Assistant | University of Waterloo

May 2017 - Present

Waterloo, ON, Canada

- Assisted in course development for undergraduate courses in HCI, programming and management information systems.
- Conducted tutorials and review sessions for courses over 50+ students.

Graduate Research Assistant (Information Retrieval) | University of Waterloo

May 2015 - April 2017

Waterloo, ON, Canada

- Researched search-as-learning as a function of search behavior (i.e. skimming, ordering, and reading documents for learning) and understanding what properties of documents are useful for learning.
- Conducted a lab experiment to investigate search-as-learning.

Software Developer Intern | Demonware Inc (a subsidiary of Activision Blizzard)

Sep 2015 - Dec 2015

Vancouver, BC, Canada

- Worked in the operation team building orchestration plane systems for data centers of AAA games.
- Built productivity and debugging tools to automate the deployment and management of the data centers infrastructure. The tools are being used across the company to configure deployment tasks.
- Assisted in code and test migration of major software components in the company.

Undergraduate Research Assistant (Recommender Systems) | University of Victoria

Jan 2014 - April 2014

Victoria, BC, Canada

- Implemented and evaluated recommender system methods presented in academic research papers.
- Developed new methods for improving recommender systems' prediction accuracy by utilizing user-created favorites lists.
- Published and presented results in an academic conference.

Talks

Users, Queries, and Abandonment in Web Search | Etsy, Brooklyn (Virtual Talk). February, 2021.

Understanding Query Abandonment in Search | Google, Mountain View. December, 2017.

Skills

Languages: Python, Java, C++, SQL, JavaScript, HTML/CSS, R.

User Research: Quantitative/qualitative experiments, Experimental design, Eye tracking, Usability testing, Click analysis.

Libraries and Frameworks: Django, Flask, Tobii Eyetracking, Elasticsearch, pandas, NumPy, Matplotlib, PyTorch, ggplot.

Platforms: AWS, Amazon Mechanical Turk, Microsoft Azure, Google Cloud.

Developer Tools: Git, Docker, PyCharm, Vim.

Selected Projects

User Interaction in Interactive Information Retrieval

Jan 2015 - Current

Quantitative & Qualitative research, controlled experiment, click analysis, usability study (in-person & remote), eye tracking, user interviews.



- Conducted research studies to investigate user search behavior in mobile and desktop.
- Investigated the rate of query abandonment on different qualities and properties of search results.
- Developed a new model to determine user's actions in web search systems.
- Built visualization techniques to visualize searcher eye gaze patterns in search engine result pages.

High-recall Retrieval Methods and Systems

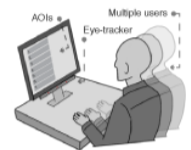
April 2017 - Current

Machine learning, large-scale data processing, full-stack web development, usability testing.



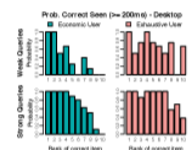
- With collaborators, implemented an efficient high-recall retrieval system using human-in-the-loop machine learning methods to retrieve relevant documents.
- Able to process over a million text documents in less than two seconds.
- Conducted a usability testing experiment to understand user experience.
- Achieved the highest performance in recall metrics among 14 teams in TREC Core in 2017 and 2018.

Selected Publications [\[Full list here\]](#)



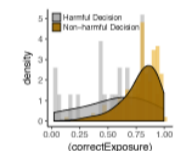
Visualizing Searcher Gaze Patterns [\[PDF\]](#)

Mustafa Abualsaud, Mark D. Smucker, and Charles L.A. Clarke. 2021. In Proceedings of the 2021 Conference on Human Information Interaction and Retrieval (CHIIR).



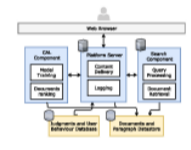
Patterns of Search Result Examination: Query to First Action [\[PDF\]](#)

Mustafa Abualsaud and Mark D. Smucker. 2019. In Proceedings of the 28th ACM International Conference on Information and Knowledge Management (CIKM).



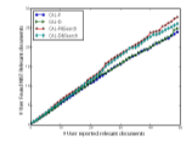
Exposure and Order Effects of Misinformation on Health Search Decisions [\[PDF\]](#)

Mustafa Abualsaud and Mark D. Smucker. 2019. In ROME 2019 Workshop on Reducing Online Misinformation Exposure (SIGIR'19).



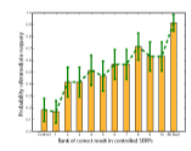
A System for Efficient High-Recall Retrieval [\[PDF\]](#)

Mustafa Abualsaud, Nimesh Ghelani, Haotian Zhang, Mark D. Smucker, Gordon V. Cormack, and Maura R. Grossman. 2018. In the 41st International ACM SIGIR Conference on Research & Development in Information Retrieval (SIGIR).



Effective User Interaction for High-Recall Retrieval: Less is More [\[PDF\]](#)

Haotian Zhang, Mustafa Abualsaud, Nimesh Ghelani, Mark D. Smucker, Gordon V. Cormack, and Maura R. Grossman. 2018. In Proceedings of the 27th ACM International Conference on Information and Knowledge Management (CIKM).



A Study of Immediate Requery Behavior in Search [\[PDF\]](#)

Haotian Zhang, Mustafa Abualsaud and Mark D. Smucker. 2018. In Proceedings of the 2018 Conference on Human Information Interaction and Retrieval (CHIIR).

UWaterlooMDS at the TREC 2017 Common Core Track [\[PDF\]](#)

Haotian Zhang, Mustafa Abualsaud, Nimesh Ghelani, Angshuman Ghosh, Mark D. Smucker, Gordon V. Cormack, and Maura R. Grossman. 2017. In Proceedings of the Twenty-Seventh Text REtrieval Conference (TREC).

Open Source Code

Gathera | [\[Demo\]](#) [\[Github\]](#)

Python, Django, C++, JavaScript, PostgreSQL, Docker.

Provides high data processing performance and a user-friendly document assessment interface built using Python Django web framework.

Githeat | [\[Demo\]](#) [\[Github\]](#)

Python, Blessed, Git.

Interactive visualization heatmap of git commits in the terminal. Built using Python's curses library. Over 100+ Github stars.

Service and Awards

- Member of the Graduate Student Recruiting Committee, 2020-2021.
- Member of the School Advisory Committee on Appointments. University of Waterloo, 2020.
- Four SIGIR Travel Awards (Over \$2,000 USD in total).
- Full Scholarship For Educational Excellence - Undergraduate/Masters. (\$60,000 CAD)