

MEASURING USER ENGAGEMENT

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Measuring User Engagement Heather O'Brien

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Measuring User Engagement Mounia Lalmas, Heather O'Brien, Elad Yom-Tov, 2022-05-31 User engagement refers to the quality of the user experience that emphasizes the positive aspects of interacting with an online application and in particular the desire to use that application longer and repeatedly User engagement is a key concept in the design of online applications whether for desktop tablet or mobile motivated by the observation that successful applications are not just used but are engaged with Users invest time attention and emotion in their use of technology and seek to satisfy pragmatic and hedonic needs Measurement is critical for evaluating whether online applications are able to successfully engage users and may inform the design of and use of applications User engagement is a multifaceted complex phenomenon this gives rise to a number of potential measurement approaches Common ways to evaluate user engagement include using self report measures e.g questionnaires observational methods e.g facial expression analysis speech analysis neuro physiological signal processing methods e.g respiratory and cardiovascular accelerations and decelerations muscle spasms and web analytics e.g number of site visits click depth These methods represent various trade offs in terms of the setting laboratory versus in the wild object of measurement user behaviour affect or cognition and scale of data collected For instance small scale user studies are deep and rich but limited in terms of generalizability whereas large scale web analytic studies are powerful but negate users motivation and context The focus of this book is how user engagement is currently being measured and various considerations for its measurement Our goal is to leave readers with an appreciation of the various ways in which to measure user engagement and their associated strengths and weaknesses We emphasize the multifaceted nature of user engagement and the unique contextual constraints that come to bear upon attempts to measure engagement in different settings and across different user groups and web domains At the same time this book advocates for the development of good measures and good measurement practices that will advance the study of user engagement and improve our understanding of this construct which has become so vital in our wired world User Engagement Research and Practice Heather

O'Brien, 2025-06-13 This book presents a holistic overview of user engagement which has become an increasingly important subject for a variety of industry and academic fields including engineering computer science and information science The author begins with a definition of user engagement and an explanation of the theoretical background of the topic The book then covers methodological approaches and examines some of the broader factors that influence user engagement The author explains methods for measuring user engagement and evaluates the efficacy of each one The book includes examples from recent research studies throughout describing user engagement in different settings with a variety of digital information systems Explains the theoretical underpinnings of user engagement providing readers with a thorough understanding of the topic Presents methodology and strategies that have applications for a variety of fields in academia and industry Incorporates recent user engagement research studies to provide up to date coverage of the subject Heather O

Brien Ph D is a Full Professor at the School of Information at the University of British Columbia where she teaches and researches in the areas of human information interaction and research methods Dr O'Brien has contributed numerous highly cited referred journal and conference publications and her research interests include building a sound theoretical foundation for the study of user engagement UE developing evaluating and promoting effective methodological tools and techniques for its measurement and exploring the role of UE as a mediator for learning quality of life and knowledge sharing outcomes with digital information and health applications Her User Engagement Scale UES a valid and reliable experiential questionnaire designed to understand digitally mediated user experiences is used internationally and has been translated into multiple languages

User Engagement Research and Practice Heather O'Brien, 2025-03-15 This book presents a holistic overview of user engagement which has become an increasingly important subject for a variety of industry and academic fields including engineering computer science and information science The author begins with a definition of user engagement and an explanation of the theoretical background of the topic The book then covers methodological approaches and examines some of the broader factors that influence user engagement The author explains methods for measuring user engagement and evaluates the efficacy of each one The book includes examples from recent research studies throughout describing user engagement in different settings with a variety of digital information systems

New Directions in Third Wave Human-Computer Interaction: Volume 2 - Methodologies Michael Filimowicz, Veronika Tzankova, 2018-06-27 This is the first extensive compilation documenting contemporary third wave HCI covering key methodological developments at the leading edge of human computer interactions Now in its second decade as a major current of HCI research the third wave integrates insights from the humanities and social sciences to emphasize human dimensions beyond workplace efficiency or cognitive capacities Where the earliest HCI work has been strongly based on the concept of human machine coupling which expanded to workplace collaboration as computers came into mainstream professional use today HCI can connect to almost any human experience because there are new applications for every aspect of daily life Volume 2 Methodologies covers methodological approaches grounded in autoethnography empathy based design crowdsourcing psychometrics user engagement speculative design somatics embodied cognition peripheral practices and transdisciplinarity

Advances in Cognitive Translation Studies Ricardo Muñoz Martín, Sanjun Sun, Defeng Li, 2021-11-18 This book presents the latest theoretical and empirical advances in cognitive translation studies It involves the modes of written translation interpreting sight translation and computer aided translation In separate chapters this book proposes a new analytical framework for studying keylogged translation processes a framework that reconciles a sociological and a psychological approach for studying expertise in translation and a pedagogical model of translation competence It expands the investigation of cognitive processes by considering the role of emotional factors reviews and develops the effort models of interpreting as a didactic construct The empirical studies in this book revolve around cognitive load and effort they explore the influences of text

factors e.g. metaphors, complex lexical items, directionality while taking into account translator factors and evaluate the user experience of computer aided translation tools

Interactive IR User Study Design, Evaluation, and Reporting Jiqun Liu, Chirag Shah, 2022-05-31 Since user study design has been widely applied in search interactions and information retrieval IR systems evaluation studies a deep reflection and meta evaluation of interactive IR IIR user studies is critical for sharpening the instruments of IIR research and improving the reliability and validity of the conclusions drawn from IIR user studies To this end we developed a faceted framework for supporting user study design reporting and evaluation based on a systematic review of the state of the art IIR research papers recently published in several top IR venues n 462 Within the framework we identify three major types of research focuses extract and summarize facet values from specific cases and highlight the under reported user study components which may significantly affect the results of research Then we employ the faceted framework in evaluating a series of IIR user studies against their respective research questions and explain the roles and impacts of the underlying connections and collaborations among different facet values Through bridging diverse combinations of facet values with the study design decisions made for addressing research problems the faceted framework can shed light on IIR user study design reporting and evaluation practices and help students and young researchers design and assess their own studies

Social Media and Politics Glenn W. Richardson Jr., 2016-11-21 This two volume set explores the various ways social media are profoundly changing politics in America The last decade has seen dramatic changes in the U S political process The advent of social media and other new forms of expression have enabled an unprecedented number of citizens to enter the political arena by expressing their opinions about issues and candidates in ways that can influence untold numbers of voters and officials But the vast majority of politicians have not fully grasped how social media has fundamentally changed the process of communication or adjusted to the dramatic shift in political power that is taking place Written by experts on the intersections of politics public opinion and popular culture this book examines how new media have brought political power to the people like never before provided new channels through which politicians communicate and attempt to influence public opinion and caused a game changing shift in political power Volume one focuses on how savvy politicians are learning to communicate in new ways via new media in order to enhance their political appeal The second volume examines the various ways in which individuals or groups who use new social media are affecting voters decisions applying pressure to elected or appointed officials and influencing the direction of the country

The Handbook of Communication Engagement Kim A. Johnston, Maureen Taylor, 2018-04-25 A comprehensive volume that offers the most current thinking on the practice and theory of engagement With contributions from an international panel of leaders representing diverse academic and professional fields The Handbook of Communication Engagement brings together in one volume writings on both the theory and practice of engagement in today s organizations and societies The expert contributors explore the philosophical theoretical and applied concepts of communication engagement as it pertains to

building interaction and connections in a globalized networked society The Handbook of Communication Engagement is comprehensive in scope with case studies of engagement from various disciplines including public relations marketing advertising employee relations education public diplomacy and politics The authors advance the current thinking in engagement theory strategy and practice and provide a review of foundational and emerging research in engagement topics The Handbook of Communication Engagement is an important text that Provides an overview of the foundations and philosophies of engagement Identifies the contexts of engagement relating to specific areas across government and corporations including CSR consumer activism diplomacy digital and social impact Includes examples of contemporary engagement practice Presents applications of engagement and technology Offers insights on the future directions of engagement The Handbook of Communication Engagement offers an essential reference for advanced undergraduate graduate students practitioners and scholars from communication media advertising public relations public policy and public diplomacy areas The volume contains a compendium of the writings on the most recent advances on the theory and practice of engagement Winner of the 2018 PRIDE Award for Innovation Development and Educational Achievement from the Public Relations Division of the National Communication Association

Video Structure Meaning Brian C O'Connor, Richard L. Anderson, 2022-05-31 For over a century motion pictures have entertained us occasionally educated us and even served a few specialized fields of study Now however with the precipitous drop in prices and increase in image quality motion pictures are as widespread as paperback books and postcards once were Yet theories and practices of analysis for particular genres and analytical stances definitions concepts and tools that span platforms have been wanting Therefore we developed a suite of tools to enable close structural analysis of the time varying signal set of a movie We take an information theoretic approach message is a signal set generated coded under various antecedents sent over some channel decoded under some other set of antecedents Cultural technical and personal antecedents might favor certain message making systems over others The same holds true at the recipient end yet the signal set remains the signal set In order to discover how movies work their structure and meaning we honed ways to provide pixel level analysis forms of clustering and precise descriptions of what parts of a signal influence viewer behavior We assert that analysis of the signal set across the evolution of film from Edison to Hollywood to Brakhage to cats on social media yields a common ontology with instantiations responses to changes in coding and decoding antecedents

News and Democratic Citizens in the Mobile Era Johanna Dunaway, Kathleen Searles, 2023 Though people frequently use mobile technologies for news consumption evidence from several fields shows that smaller screens and slower connection speeds pose major limitations for meaningful reading In *News and Democratic Citizens in the Mobile Era* Johanna Dunaway and Kathleen Searles demonstrate the effects of mobile devices on news attention engagement and recall and identify a key cognitive mechanism underlying these effects cognitive effort They advance a theory that is both old and new the costs of information seeking curb participatory behaviors unless the benefits outweigh them For news

consumers in the mobile era for example mobile devices increase the time economic and cognitive costs associated with information seeking Only for a small few do the benefits of attending to the news on mobile devices outweigh the costs Building on economic theories of news media choice and the ways audience demand shapes news craft and production Dunaway and Searles argue that attention engagement and recall suffer when people consume news on mobile devices They then investigate the implications of these effects for the news industry and for an informed democratic citizenry Drawing on both laboratory and real world studies Dunaway and Searles bring the psychophysiology of news consumption to bear on the question of what we could lose in an information environment characterized by a dramatic shift in reliance on mobile devices

Third Space, Information Sharing, and Participatory Design Preben Hansen, Ina Fourie, Anika Meyer, 2022-05-31
Society faces many challenges in workplaces everyday life situations and education contexts Within information behavior research there are often calls to bridge inclusiveness and for greater collaboration with user centered design approaches and more specifically participatory design practices Collaboration and participation are essential in addressing contemporary societal challenges designing creative information objects and processes as well as developing spaces for learning and information and research interventions The intention is to improve access to information and the benefits to be gained from that This also applies to bridging the digital divide and for embracing artificial intelligence With regard to research and practices within information behavior it is crucial to consider that all users should be involved Many information activities i e activities falling under the umbrella terms of information behavior and information practices manifest through participation and thus methods such as participatory design may help unfold both information behavior and practices as well as the creation of information objects new models and theories Information sharing is one of its core activities For participatory design with its value set of democratic inclusive and open participation towards innovative practices in a diversity of contexts it is essential to understand how information activities such as sharing manifest itself For information behavior studies it is essential to deepen understanding of how information sharing manifests in order to improve access to information and the use of information Third Space is a physical virtual cognitive and conceptual space where participants may negotiate reflect and form new knowledge and worldviews working toward creative practical and applicable solutions finding innovative appropriate research methods interpreting findings proposing new theories recommending next steps and even designing solutions such as new information objects or services Information sharing in participatory design manifests in tandem with many other information interaction activities and especially information and cognitive processing Although there are practices of individual information sharing and information encountering information sharing mostly relates to collaborative information behavior practices creativity and collective decision making Our purpose with this book is to enable students researchers and practitioners within a multi disciplinary research field including information studies and Human Computer Interaction approaches to gain a deeper understanding of how the core activity of information sharing in participatory design

in which Third Space may be a platform for information interaction is taking place when using methods utilized in participatory design to address contemporary societal challenges This could also apply for information behavior studies using participatory design as methodology We elaborate interpretations of core concepts such as participatory design Third Space information sharing and collaborative information behavior before discussing participatory design methods and processes in more depth We also touch on information behavior information practice and other important concepts Third Space information sharing and information interaction are discussed in some detail A framework with Third Space as a core intersecting zone platform and adaptive and creative space to study information sharing and other information behavior and interactions are suggested As a tool to envision information behavior and suggest future practices participatory design serves as a set of methods and tools in which new interpretations of the design of information behavior studies and eventually new information objects are being initiated involving multiple stakeholders in future information landscapes For this purpose we argue that Third Space can be used as an intersection zone to study information sharing and other information activities but more importantly it can serve as a Third Space Information Behavior TSIB study framework where participatory design methodology and processes are applied to information behavior research studies and applications such as information objects systems and services with recognition of the importance of situated awareness

Social Media and Library Services Lorri

Mon, 2022-05-31 The rise of social media technologies has created new ways to seek and share information for millions of users worldwide but also has presented new challenges for libraries in meeting users where they are within social spaces From social networking sites such as Facebook and Google and microblogging platforms such as Twitter and Tumblr to the image and video sites of YouTube Flickr Instagram and to geotagging sites such as Foursquare libraries have responded by establishing footholds within a variety of social media platforms and seeking new ways of engaging with online users in social spaces Libraries are also responding to new social review sites such as Yelp and Tripadvisor awareness sites including StumbleUpon Pinterest Goodreads and Reddit and social question and answer Q A sites such as Yahoo Answers sites which engage social media users in functions similar to traditional library content curation readers advisory information and referral and reference services Establishing a social media presence extends the library's physical manifestation into virtual space and increases the library's visibility reach and impact However beyond simply establishing a social presence for the library a greater challenge is building effective and engaging social media sites that successfully adapt a library's visibility voice and presence to the unique contexts audiences and cultures within diverse social media sites This lecture examines the research and theory on social media and libraries providing an overview of what is known and what is not yet known about libraries and social media Chapter 1 focuses on the social media environments within which libraries are establishing a presence including how social media sites differ from each other yet work together within a social ecosphere Chapter 2 examines how libraries are engaging with users across a variety of social media platforms and the extent to which libraries

are involved in using these different social media platforms as well as the activities of libraries in presenting a social self sharing information and interacting with users via social media Chapter 3 explores metrics and measures for assessing the impact of the library's activity in social media sites The book concludes with Chapter 4 on evolving directions for libraries and social media including potential implications of new and emerging technologies for libraries in social spaces Table of Contents Preface The Social Media Environment Libraries and Social Media Assessing Social Media Sites and Services Evolving Directions in Social Libraries Bibliography Author Biography

Social Informatics Evolving Pnina Fichman, Madelyn R. Sanfilippo, Howard Rosenbaum, 2022-05-31 The study of people information and communication technologies and the contexts in which these technologies are designed implemented and used has long interested scholars in a wide range of disciplines including the social study of computing science and technology studies the sociology of technology and management information systems As ICT use has spread from organizations into the larger world these devices have become routine information appliances in our social lives researchers have begun to ask deeper and more profound questions about how our lives have become bound up with technologies A common theme running through this research is that the relationships among people technology and context are dynamic complex and critically important to understand This book explores social informatics SI one important and dynamic approach that researchers have used to study these complex relationships SI is the interdisciplinary study of the design uses and consequences of information technology that takes into account their interaction with institutional and cultural contexts Kling 1998 p 52 1999 SI provides flexible frameworks to explore complex and dynamic socio technical interactions As a domain of study related largely by common vocabulary and conclusions SI critically examines common conceptions of and expectations for technology by providing contextual evidence This book describes the evolution of SI research and identifies challenges and opportunities for future research In what might be seen as an example of socio technical natural selection SI emerged in six different locations during the 1980s and 1990s Norway Slovenia Japan the former Soviet Union the UK and last the U S As SI evolved the version popularized in the US became globally dominant The evolution of SI is presented in five stages emergence foundational expansion coherence and transformation Thus we divide SI research into five major periods an emergence stage when various forms of SI emerged around the globe an early period of foundational work which grounds SI Pre 1990s a period of expansion 1990s a robust period of coherence and influence by Rob Kling 2000 2005 and a period of transformation 2006 present Following the description of the five periods we discuss the evolution throughout the periods under five sections principles concepts approaches topics and findings Principles refer to the overarching motivations and labels employed to describe scholarly work Approaches describe the theories frameworks and models employed in analysis emphasizing the multi disciplinary and interdisciplinary nature of SI Concepts include specific processes entities themes and elements of discourse within a given context revealing a shared SI language surrounding change complexity consequences

and social elements of technology Topics label the issues and general domains studied within social informatics ranging from scholarly communication to online communities to information systems Findings from seminal SI works illustrate growing insights over time and demonstrate how repeatable explanations unify SI In the concluding remarks we raise questions about the possible futures of SI research Task Intelligence for Search and Recommendation Chirag Shah,Ryen W.

White,2022-06-01 While great strides have been made in the field of search and recommendation there are still challenges and opportunities to address information access issues that involve solving tasks and accomplishing goals for a wide variety of users Specifically we lack intelligent systems that can detect not only the request an individual is making what but also understand and utilize the intention why and strategies how while providing information and enabling task completion Many scholars in the fields of information retrieval recommender systems productivity especially in task management and time management and artificial intelligence have recognized the importance of extracting and understanding people s tasks and the intentions behind performing those tasks in order to serve them better However we are still struggling to support them in task completion e g in search and assistance and it has been challenging to move beyond single query or single turn interactions The proliferation of intelligent agents has unlocked new modalities for interacting with information but these agents will need to be able to work understanding current and future contexts and assist users at task level This book will focus on task intelligence in the context of search and recommendation Chapter 1 introduces readers to the issues of detecting understanding and using task and task related information in an information episode with or without active searching This is followed by presenting several prominent ideas and frameworks about how tasks are conceptualized and represented in Chapter 2 In Chapter 3 the narrative moves to showing how task type relates to user behaviors and search intentions A task can be explicitly expressed in some cases such as in a to do application but often it is unexpressed Chapter 4 covers these two scenarios with several related works and case studies Chapter 5 shows how task knowledge and task models can contribute to addressing emerging retrieval and recommendation problems Chapter 6 covers evaluation methodologies and metrics for task based systems with relevant case studies to demonstrate their uses Finally the book concludes in Chapter 7 with ideas for future directions in this important research area **Fuzzy Information Retrieval**

Donald H. Kraft,Erin Colvin,2022-06-01 Information retrieval used to mean looking through thousands of strings of texts to find words or symbols that matched a user s query Today there are many models that help index and search more effectively so retrieval takes a lot less time Information retrieval IR is often seen as a subfield of computer science and shares some modeling applications storage applications and techniques as do other disciplines like artificial intelligence database management and parallel computing This book introduces the topic of IR and how it differs from other computer science disciplines A discussion of the history of modern IR is briefly presented and the notation of IR as used in this book is defined The complex notation of relevance is discussed Some applications of IR is noted as well since IR has many practical uses

today Using information retrieval with fuzzy logic to search for software terms can help find software components and ultimately help increase the reuse of software This is just one practical application of IR that is covered in this book Some of the classical models of IR is presented as a contrast to extending the Boolean model This includes a brief mention of the source of weights for the various models In a typical retrieval environment answers are either yes or no i e on or off On the other hand fuzzy logic can bring in a degree of match vs a crisp i e strict match This too is looked at and explored in much detail showing how it can be applied to information retrieval Fuzzy logic is often times considered a soft computing application and this book explores how IR with fuzzy logic and its membership functions as weights can help indexing querying and matching Since fuzzy set theory and logic is explored in IR systems the explanation of where the fuzz is ensues The concept of relevance feedback including pseudorelevance feedback is explored for the various models of IR For the extended Boolean model the use of genetic algorithms for relevance feedback is delved into The concept of query expansion is explored using rough set theory Various term relationships is modeled and presented and the model extended for fuzzy retrieval An example using the UMLS terms is also presented The model is also extended for term relationships beyond synonyms Finally this book looks at clustering both crisp and fuzzy to see how that can improve retrieval performance An example is presented to illustrate the concepts

Digital Libraries for Cultural Heritage Tatjana

Aparac-Jelušić, 2022-05-31 European digital libraries have existed in diverse forms and with quite different functions priorities and aims However there are some common features of European based initiatives that are relevant to non European communities There are now many more challenges and changes than ever before and the development rate of new digital libraries is ever accelerating Delivering educational cultural and research resources especially from major scientific and cultural organizations has become a core mission of these organizations Using these resources they will be able to investigate educate and elucidate in order to promote and disseminate and to preserve civilization Extremely important in conceptualizing the digital environment priorities in Europe was its cultural heritage and the feeling that these rich resources should be open to Europe and the global community In this book we focus on European digitized heritage and digital culture and its potential in the digital age We specifically look at the EU and its approaches to digitization and digital culture problems detected and achievements reached all with an emphasis on digital cultural heritage We seek to report on important documents that were prepared on digitization copyright and related documents research and education in the digital libraries field under the auspices of the EU some other European and national initiatives and funded projects The aim of this book is to discuss the development of digital libraries in the European context by presenting primarily to non European communities interested in digital libraries the phenomena initiatives and developments that dominated in Europe We describe the main projects and their outcomes and shine a light on the number of challenges that have been inspiring new approaches cooperative efforts and the use of research methodology at different stages of the digital libraries

development The specific goals are reflected in the structure of the book which can be conceived as a guide to several main topics and sub topics However the author s scope is far from being comprehensive since the field of digital libraries is very complex and digital libraries for cultural heritage is even moreso *Trustworthy Communications and Complete Genealogies* Reagan W. Moore,2022-06-01 Genealogies document relationships between persons involved in historical events Information about the events is parsed from communications from the past This book explores a way to organize information from multiple communications into a trustworthy representation of a genealogical history of the modern world The approach defines metrics for evaluating the consistency correctness closure connectivity completeness and coherence of a genealogy The metrics are evaluated using a 312 000 person research genealogy that explores the common ancestors of the royal families of Europe A major result is that completeness is defined by a genealogy symmetry property driven by two exponential processes the doubling of the number of potential ancestors each generation and the rapid growth of lineage coalescence when the number of potential ancestors exceeds the available population A genealogy expands from an initial root person to a large number of lineages which then coalesce into a small number of progenitors Using the research genealogy candidate progenitors for persons of Western European descent are identified A unifying ancestry is defined to which historically notable persons can be linked *Framing Privacy in Digital Collections with Ethical Decision Making* Virginia Dressler,2022-06-01 As digital collections continue to grow the underlying technologies to serve up content also continue to expand and develop As such new challenges are presented which continue to test ethical ideologies in everyday environs of the practitioner There are currently no solid guidelines or overarching codes of ethics to address such issues The digitization of modern archival collections in particular presents interesting conundrums when factors of privacy are weighed and reviewed in both small and mass digitization initiatives Ethical decision making needs to be present at the onset of project planning in digital projects of all sizes and we also need to identify the role and responsibility of the practitioner to make more virtuous decisions on behalf of those with no voice or awareness of potential privacy breaches In this book notions of what constitutes private information are discussed as is the potential presence of such information in both analog and digital collections This book lays groundwork to introduce the topic of privacy within digital collections by providing some examples from documented real world scenarios and making recommendations for future research A discussion of the notion privacy as concept will be included as well as some historical perspective with perhaps one the most cited work on this topic for example Warren and Brandeis Right to Privacy 1890 Concepts from the The Right to Be Forgotten case in 2014 Google Spain SL Google Inc v Agencia Espa la de Proteccei n de Datos Mario Costeja Gonz lez are discussed as to how some lessons may be drawn from the response in Europe and also how European data privacy laws have been applied The European ideologies are contrasted with the Right to Free Speech in the First Amendment in the U S highlighting the complexities in setting guidelines and practices revolving around privacy issues when applied to real life scenarios Two

ethical theories are explored Consequentialism and Deontological Finally ethical decision making models will also be applied to our framework of digital collections Three case studies are presented to illustrate how privacy can be defined within digital collections in some real world examples

Social Monitoring for Public Health Michael J. Paul, Mark Dredze, 2022-05-31 Public health thrives on high quality evidence yet acquiring meaningful data on a population remains a central challenge of public health research and practice Social monitoring the analysis of social media and other user generated web data has brought advances in the way we leverage population data to understand health Social media offers advantages over traditional data sources including real time data availability ease of access and reduced cost Social media allows us to ask and answer questions we never thought possible This book presents an overview of the progress on uses of social monitoring to study public health over the past decade We explain available data sources common methods and survey research on social monitoring in a wide range of public health areas Our examples come from topics such as disease surveillance behavioral medicine and mental health among others We explore the limitations and concerns of these methods Our survey of this exciting new field of data driven research lays out future research directions

Click Models for Web Search Aleksandr Chuklin, Ilya Markov, Maarten de Rijke, 2022-05-31 With the rapid growth of web search in recent years the problem of modeling its users has started to attract more and more attention of the information retrieval community This has several motivations By building a model of user behavior we are essentially developing a better understanding of a user which ultimately helps us to deliver a better search experience A model of user behavior can also be used as a predictive device for non observed items such as document relevance which makes it useful for improving search result ranking Finally in many situations experimenting with real users is just infeasible and hence user simulations based on accurate models play an essential role in understanding the implications of algorithmic changes to search engine results or presentation changes to the search engine result page In this survey we summarize advances in modeling user click behavior on a web search engine result page We present simple click models as well as more complex models aimed at capturing non trivial user behavior patterns on modern search engine result pages We discuss how these models compare to each other what challenges they have and what ways there are to address these challenges We also study the problem of evaluating click models and discuss the main applications of click models

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