Don Turnbull, Ph.D.

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Overview

Highly effective software developer, designer and researcher with over 25 years experience. Contributor to multiple commercially successful consumer and enterprise applications including Content Management Systems, CASE tools, desktop utilities, search tools and ecommerce Web sites. Accomplished researcher and creator of innovative, patented and trade-secreted technologies related to information retrieval, behavioral modeling, content organization and analytics. Author of numerous academic publications including: a book on Web-based information seeking and knowledge work, articles on human-computer interaction design, personalization for information retrieval and recommender systems, as well as numerous definitive works on information architecture methodologies, designs and implementations.

Principal – InfoTheory/Don Turnbull, ULC   **2002-ongoing**

Advising software companies, design agencies and information services corporations on the research and development of systems architectures, data science activities and human-computer interaction. Directing the design of multi-platform applications (desktop and mobile) for consumer-oriented information systems including Web, smartphone and tablet interfaces, information architectures and ecommerce recommendation systems as well as advising on future development based on data-centric architectures and for re-designing existing systems in use.

Analyzing intellectual property, patent portfolios and innovative technologies to author reports, research software architecture and software development methods, create new IP, advise intellectual asset development, as well as serve as an expert in patent-related cases with prior art, infringement or validation issues.

Designed and prototyped information retrieval systems and application programming interfaces for consumer and enterprise search systems involving indexing, tagging and faceted-metadata methods. Created techniques and organization schemes to instrument systems for collection and analysis of empirical behavioral data logs from Web site usage and user-generated content. Developed data models and interaction strategies for consumer and vertical channel mobile devices for information retrieval, storage and management.

Advised and coordinated a very large, multiple partner contract systems development effort as the technical architect for a back-office ecommerce enterprise portal that included vendor tool selection, managing and negotiating among partners for project management and high-level goal definition. Devised and configured analytics tools as well as acting upon analysis findings to provide guidelines for site information architecture and user experience designs.

Designed and directed creation of a knowledge management system to provide efficient development workflow, search functionality and knowledge discovery from intranet information sources including the design and deployment of enterprise wikis, blogs, social networking and workgroup collaboration tools, source code version control and office documents including (OLAP) reporting and financial applications. Lead efforts to build upon open source applications and protocols including novel interface designs, autonomous agents and collaborative filtering to improve information access and use in the organization.

Advisor – ThinkCX   **2016 - present**

Directing research efforts for large-scale machine learning platform for collecting, measuring and predicting user behavior across mobile device and geo-locational activity traces. Advised on strategic use and extension for a social media analysis framework for user behavior prediction. Advising on the startup process, general technology and inventing as well as authoring patents.

Advisor – University of Texas at Austin Technology Incubator   2009-2011 & 2013 - 2018
Mentor and Advisor with the University of Texas at Austin, Austin Technology Incubator and IC^2 (Innovation, Creativity and Capital) Institute to engage local and international technology companies (primarily software startups) in advancing research, providing strategic expertise, intellectual property evaluation, market assessment and assisting in designing products for market.

Research Computer Scientist – Tapstream   2013
Researched and invented novel systems and designs in desktop and mobile computing, data science, user modeling and analytics domains to produce intellectual property for existing and future technologies.

Investigated the state of the art and the competitive landscape for software services and advising directions for future product development.

Principal Data Scientist & Architect – Wyley Interactive   2012-2013
Researched and developed algorithms, data sets and software architectures for a mobile games discovery, recommendation and rewards system. Created intellectual property including system designs, algorithms and computational methods for patent-pending systems. Wrote and coordinated research grants and other funding programs.

Architected an empirical business intelligence analytics platform for understanding and predicting user acquisition, monetization strategy, app distribution, gameplay telemetry, operation costs and social interaction in the mobile gaming space.

Assistant Professor – University of Texas at Austin   2002-2009
Created and taught graduate-level courses and development labs in Information Architecture, Interaction Design & Human Computer Interaction (HCI), Web Analytics, Web Information Retrieval Evaluation & Design (search), the Semantic Web and Knowledge Management systems. Investigated very large-scale data mining systems and algorithms (including Web use data for personalization), interface designs for multimedia access and Web search engines. Co-Principal Investigator for Web content classification and collaborative filtering system (the OpenChoice Project) including system architecture, algorithm evaluation, interface design and user coordination. Conducted and collaborated on Information Retrieval system development for blog analysis and topic distillation tasks including spam detection and initial sentiment analysis.

Explored search engine technologies (multimedia, indexing, interaction), search engine optimization (natural organic search, personalized search, sponsored advertising search) as well as creation and empirical analysis of behavioral model of search user experience towards improving the search process.

Advised graduate students and managed research team efforts for information technology research and development including Semantic Web applications, mobile device interfaces, Content Management Systems, Web browser software analysis, Web accessibility evaluation, Web link mining and analytics, information architecture design methodologies, and Web advertising plans and tools.

Director of Advanced Development − Outride, Inc. (acquired by Google, Inc.)   2000-2001
Created and Coordinated intellectual property assets including patent applications and licensed patents from Xerox PARC as well as original work developed at Outride. Authored multiple patents relating to personal relevance models for information retrieval, information privacy and e-commerce systems in networked and mobile environments. Worked with attorneys to manage, track, develop and revise patent portfolio. Authored several trade-secreted technologies, patent applications and at least one patent (7,089,237) for interfaces and systems that display content for commerce activities in mobile and/or networked environments which could include desktop, smartphone, tablet or set-top devices.

Initiated and managed Competitive Intelligence efforts to scan for emerging technologies including research reviews, attending conferences and analyzing competitor technologies. Organized intelligence

resources for engineering and legal purposes to protect and augment existing intellectual property. Maintained the Competitive Intelligence database as a knowledge management activity and served as a technical strategic advisor for business partners.

Acted as research advisor for all corporate data mining, interface designs and usability studies activities. Worked closely with User Interface design team to design product specifications for an application to search the Web; manage bookmarks; view and search Web use history; and interact with a directory of Web-based resources. Designed high-level technical architecture and interface for a Web browsing privacy application to enable users to control and edit data collected about their Web use activities.

Managed Metrics project with vendors to provide a value proposition for Outride technology for business development. Selected an external testing agency; designed the initial tests; determined evaluation criteria; selected competing technologies; designed data collection methods; analyzed test data; and edited the final report. This extremely successful project served as a key asset in demonstrating Outride technology to investors, business partners and industry analysts and additionally used extensively in press releases and corporate product literature.

Research Scientist & WebTracker Development Lead − University of Toronto   1997-2000
Planned and implemented a 16-month study to develop a comprehensive understanding of corporate Internet use utilizing a synthesis of data collection and analysis methods including an initial survey questionnaire; software to collect use data gathered with a custom-developed Web tracking application; and interviews with study participants.

Analyzed data using qualitative and quantitative methods to test hypotheses of new models of Information Seeking and Information Retrieval behavior. Used study results to make recommendations on improving organizational Knowledge Management and individual Web use techniques, as well as to design new software tools to coordinate and leverage organizations' intranet and Internet use.

Designed and prototyped *WebTracker*: a client-side data collection instrument for transparently logging Web browser use. Researched data collection methods, instruments for Internet protocols and network-enabled client applications. Automated the data mining of WebTracker logs with customized analysis tools to build both individual and aggregate models of Web use. Initiated consortium with other research institutes to expand WebTracker use.

Lead Technical Architect: Internet Applications − IBM Interactive Media Group   1996
Designed and authored specifications for hybrid (CD-ROM and Internet) *World Book-IBM Interactive Multimedia Encyclopedia* involving data formats, user interface, indexing structures and versioning controls. Researched and co-developed patented the TRUE/IP protocol for registering, updating and exchanging client-server information via the Internet. Prototyped large-scale collection and analysis of client application and Internet use data.

Managed technical staff in product manager role with multiple vendors and locations including interviewing, hiring, training and planning state-of-the-art development labs. Developed technical architecture for e-Business services using database technology for user profiling to enable content personalization. Directed in-house usability efforts and commercial opportunities for existing technologies. Prototyped Web site building service included with all IBM Small Business System sales.

Knowledge Management Researcher − AT&T   1995
Designed and constructed ISO 9000-compliant Web-based Knowledge Management system for corporate technical information. Researched and developed an iterative methodology to develop, organize and publish interactive documents using object-oriented content classification and user-centered design principles. Trained technical staff in this new methodology including coursework and system templates.

Sr. Information Developer − MicroHelp, Inc.   1994-1995
Programmed Microsoft Windows utility software application including file metadata analysis and duplication detection algorithms. Designed and prototyped user interface for *UnInstaller for Windows*

(the best-selling utility in 1994, over 4 million sold). Conducted usability studies including designing test scenarios; user modeling; monitoring and recording test data; and analyzing resulting data. Developed scripts to automatically generate hypertext documentation from print documentation. Designed and programmed interactive multimedia applications to demonstrate software products.

Technical Editor − Macmillan/SAMS Publishing   **1994**
Edited object-based visual programming and software development books for technical accuracy, initially for *ObjectView*, a product I designed for KnowledgeWare. Wrote and tested programming examples and database overview chapters used in various publications.

Methodologist − KnowledgeWare, Inc.   **1991-1994**
Managed project team through development cycle of Computer-Aided Software Engineering (CASE) tools including finalizing requirements, organizing development team, running status meetings, reviewing documentation, testing, prioritizing development issues and designing future enhancements. Used industry standard software engineering methodologies and frameworks (including Information Engineering and Rapid Application Development) for large-scale software projects.

Researched software engineering methodologies to design methods and technologies for next generation CASE tools. Implemented designs included an object-based interface builder and large-scale hypertext information authoring and content management applications using graphical objects, with SGML (GML) formatting and semantics, WYSIWYG editing as well as link management. Designed and reviewed all graphical user interfaces for compliance. Created all corporate usability and interface design standards including task analysis methods to improve products.

Education
Ph.D. Information Studies - University of Toronto, 2002

Dissertation: "Knowledge Discovery in Databases of Web Use: A Search for Informetric and Behavioral Models of Web Information Seeking"

M.S. Information, Design & Technology - Georgia Institute of Technology, 1995

Thesis: "Object-Oriented Information Development: A Methodology and System for Large-Scale Hypertext Documents" (Web server design and Semantic Web content organization and deployment)

B.A. General Studies - University of Texas at Arlington, 1988

Knowledge Engineering (Computer Science & Cognitive Science)

Books
Choo, Chun Wei, Brian Detlor, and Don Turnbull. (2000) Web Work: Information Seeking and Knowledge Work on the World Wide Web. The Netherlands: Kluwer Academic Publishers.

Book Chapters
Dillon, A., & Turnbull, D. (2010) Information Architecture. Encyclopedia of Library and Information Science, 2010, (3rd Ed.). Taylor & Francis.

Dillon, A., & Turnbull, D. (2006) Information Architecture. Encyclopedia of Library and Information Science, 2006. Taylor & Francis.

Turnbull, D. (2005). World Wide Web Information Seeking. In K. E. Fisher, S. Erdelez (Eds.), Theories of Information Behavior. Medford, New Jersey: Information Today, Inc.

Selected Journal Articles

Turnbull, D., & Bright, L. F. (2008). Advertising Academia with Sponsored Search: An Exploratory Study Examining the Effectiveness of Google AdWords at the Local and Global Level. International Journal of Electronic Business, 6(2), 149-171.

Pitkow, J., Schutze, H., Cass, T., Cooley, R., Turnbull, D., Edmonds, A., et al. (2002). Personalized Search: A Contextual Computing Approach May Prove a Breakthrough in Personalized Search Efficiency. Communications of the ACM, 45(9), 50-55.

Edmonds, K. A. A., Bluestein, J. J., & Turnbull, D. (2006). A Personal Information and Knowledge Infrastructure Integrator. Journal of Digital Information, 5(1).

Choo, C. W., Detlor, B., & Turnbull, D. (2000). Information Seeking on the Web: An Integrated Model of Browsing and Searching. First Monday, 5(2).

Selected Conference Papers (refereed)

Turnbull, D. (2007). Rating, Voting & Ranking: Designing for Collaboration & Consensus. Paper presented at the Association of Computing Machinery Computer Human Interface Conference (SIGCHI), San Jose, CA.

Turnbull, D. (2006, May 23, 2006). Methodologies for Understanding Web Use with Logging in Context. Paper presented at the The 15th International World Wide Web Conference, Edinburgh, Scotland.

Dillon, A., Kleinman, L., Bias, R., Choi, G. O., & Turnbull, D. (2004). Reading and Searching Digital Documents: An Experimental Analysis of the Effects of Image Quality on User Performance and Perceived Effort. Paper presented at the American Society of Information Science and Technology Annual Meeting, 2004. Information Today, 267-273.

Choo, C. W., Detlor, B., & Turnbull, D. (2000). Working the Web: An Empirical Model of Web Use. Paper presented at the 33rd Hawaii Intl. Conference on System Science (HICSS), Maui, HI.

Turnbull, D. (1999). Interacting with Recommender Systems. Paper presented at the ACM SIGCHI (Computer-Human Interface) Workshop on Recommender Systems, Pittsburgh, PA.

Choo, C. W., Detlor, B., & Turnbull, D. (1999). Information Seeking on the Web - An Integrated Model of Browsing and Searching. Paper presented at the Proceedings of the 62nd Annual Meeting of the American Society of Information Science, Washington, D.C.

Choo, C. W., Detlor, B., & Turnbull, D. (1998). A Behavioral Model of Information Seeking on the Web - Preliminary Results of a Study of How Managers and IT Specialists Use the Web. Paper presented at the Proceedings of the 61st Annual Meeting of the American Society of Information Science, Pittsburgh, PA.

Selected Conference Presentations, Panels & Posters (refereed)

Turnbull, D. (2010). Quantitative Information Architecture. Presented at the American Society of Information Science & Technology Information Architecture Summit, Phoenix, AZ.

Turnbull, D. & Tolva, J. (2010). Metropolitan Information Architecture. Presented at the American Society of Information Science & Technology Information Architecture Summit, Phoenix, AZ.

Turnbull, D. (2009) Information Technology Diversity: Disruptive Technologies, Innovation & Management. Presented at the American Society of Information Science and Technology Annual Meeting, Vancouver, British Columbia, Canada.

Turnbull, D. (2009) Behavioral Checklist for Information Architecture. at the American Society of Information Science & Technology Information Architecture Summit, Memphis, TN.

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