

John Benjamin Cassel

- Current Direction Addressing the governance challenges of long-term and high-impact risks by developing information systems and design activities for discovering and circulating causal relationships and their impacts.
- Work experience
- ◇ **Software Engineer**, Wolfram|Alpha LLC, Champaign, IL (Fall 2009-Current)
 - Initiating projects related to modeling tools for engineering, economics, and social science.
 - Develop and maintain database infrastructure, focusing on problems in release engineering.
 - ◇ **Big Data Analyst**, Cdlng, Toronto, ON (Fall 2011-Spring 2012)
 - Applied prediction market analysis to early stage start-ups
 - ◇ **Member of the Technical Staff**, Wolfram Research, Champaign, IL (Summer 2008-Fall 2009)
 - Designed machine learning tools for anticipating user behavior.
 - Wrote a novel version control system for data.
 - Engineered a database deployment system.
 - ◇ **Research Engineer**, Riverglass Incorporated, Champaign, IL (Fall 2005 – Summer 2008)
 - Designed and constructed a planning language and evaluator for federated query.
 - Developed a publish and subscribe system for streaming geographic data.
 - Invented a new probabilistic network technique for modeling intelligence scanning tasks.
 - Devised a domain-specific knowledge resource editor with rich constraint checking.
 - ◇ **Research Consultant**, Riverglass Incorporated (Spring 2005 – Fall 2005)
 - Constructed a knowledge-base with probabilistic inference rules.
 - Built a planning system for evaluating the importance of analytics tasks.
 - Engineered a fine-grained security system for knowledge resources.
 - ◇ **Research Assistant**, Automated Learning Group, NCSA (Spring 2004 – Winter 2004)
 - Invented a visualization for the comparison of event sequences.
 - Discovered new algorithms for learning and planning over streams of event sequences.
 - Built a platform for handling customer relationship management information in a streaming environment.
 - ◇ **Research Assistant**, Depend Research Group, CRHC (Summer 2003 – Winter 2003)
 - Engineered an environment for mining patterns of faults to aid in error detection and recovery.
 - Formulated a transparent method for annotating compiler-generated dependency/dominator graphs with runtime-collected information.
 - ◇ **Teaching Assistant**, Department of Computer Science, (Spring 2003)
 - Wrote, graded, and assisted students on programming assignments and exams in parallel programming.
 - ◇ **Research Programmer**, Department of Physics, (Summer 2003 – Winter 2003)

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- Designed, implemented, and optimized an iteratively scanning muon tracking algorithm.
 - Tested coverage and performance of the muon tracking subsystem, including simulations to assure the feasibility of deploying the algorithm in the RTES subsystem of the BTeV particle detector.
- ◇ **Research Programmer**, Department of Aviation, (Spring 2001 – Summer 2001)
- Modeled the behavior of the crew of a Navy destroyer in the context of training simulations and onboard electronic assistant as used by the chief damage control officer.
- Education
- ◇ **OCAD University**, Toronto, ON, Canada
M.Des. in Strategic Foresight and Innovation.
Major Project: *Addressing Risk Governance Deficits through Scenario Modeling Practices*.
Adviser: Peter Jones and Walter Derzko
Committee review: John's work as demonstrated in the MRP can be recognized as an important contribution to systemic foresight theory and practice. He has identified crucial gaps in foresight as a policy and planning instrument and has addressed those with a rigorous quantifiable method framed as risk governance for expected future planning outcomes. However, the method is not simply modeling scenarios. It is based on a significant theoretical contribution that presents a novel way of framing risk and policy problems as motivated by the potential for acceptable human regret, and offers a modeling language that enables a significant variety of positions and regrets to be evaluated to enable better communication of options and actions. It has a serious moral thrust in its ability to deal effectively with problems of significant scale and complexity. Because of this temper, this methodology can cut through the technique and instrumentality often expected in these practices and facilitate breakthroughs of understanding, consensus for action, and the coordination of social power.
- ◇ **University of Illinois**, Champaign-Urbana, IL
ABD, M.Sc. in Computer Science.
Adviser: Wayne Davis
Working thesis: *The Application of Online Simulation to Describing, Learning, and Planning over Sequential Streams of Data*. This thesis developed networks of temporal intervals as a new approach for describing, mining, learning, planning, and visualizing recurring stream processes.
- ◇ **University of Illinois**, Champaign-Urbana, IL
B.Sc. in Computer Science with Honors, May 2002.
Application Sequence: *Manufacturing Engineering*.
- Skills and Interests
- ◇ **Analytical Techniques** Online and/or transductive models of machine learning, streaming data-mining, decision-theoretic planning, online simulation, recurrent and hierarchical neural networks, temporal logic, and domain-specific languages.
- ◇ **Programming Languages**
- **Professional experience in** Java (including Eclipse, ANTLR, ANTLRWorks, and Spring), Common Lisp (including KnowledgeWorks), MySQL, and Mathematica
 - **Projects using** SQL, Ruby, C++, Visual Basic, C, GAP, MIPS assembler, Matlab, Processing, Scheme, Erlang, and Maude
 - **Brief familiarity with** Python, Perl, Javascript, Prolog, X86 assembler, and many others
- ◇ **Specialized Domain Toolkits** Development within ArcMap (including ArcObjects) and RubyOnRails, Limited experience with ProEngineer/ProManufacture, LogicWorks, PovRay, and various open-source GIS platforms
- ◇ **Operating Systems and Hardware Platforms** Windows, Mac, Linux, Solaris, Lynx (hard real-time OS), Texas Instruments DSPs, BasicStamp
- ◇ **Industrial systems** Familiarity with factory simulation, reliability and quality control, and computer numerical control of machine tools

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