

John Benjamin CasseL

- Current Direction Improving the governance of infrastructure and stewardship of natural resources by developing information systems and design activities for discovering relationships, understanding stakeholders, and determining impacts.
- Work experience
- ◇ **Systems Engineer**, Agrible, Champaign, IL (Summer 2015-Current)
 - Domain modeling, data analysis, and optimization for better decision making in farm systems leading to more sustainable and profitable outcomes.
 - ◇ **Research Programmer**, Wolfram Research, Champaign, IL (Spring 2014-Summer 2015)
 - Created an engineering design framework supporting agent-based exploration.
 - Assisted in the development of user-visible Mathematica functionality.
 - Supported Wolfram|Alpha database applications.
 - ◇ **Software Engineer**, Wolfram|Alpha LLC, Champaign, IL (Fall 2009-Winter 2013)
 - Enhanced an internal object-relational toolkit with inheritance and better geotemporal support.
 - Advised multiple object-relational schema designs.
 - Developed and maintained W|A database release infrastructure.
 - ◇ **Big Data Analyst**, Cdling, 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 (2004)
 - Invented a visualization for the comparison of event sequences.
 - Discovered new algorithms for learning and planning over streams of event sequences.
 - ◇ **Research Assistant**, Depend Research Group, CRHC (Summer 2003 – Fall 2003)

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- 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)
 - ◇ **Research Programmer**, Department of Physics, (Summer 2002 – Winter 2002)
 - Designed, implemented, optimized, and assessed an iteratively scanning muon tracking algorithm for 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, May 2011
 Major Project: *Addressing Risk Governance Deficits through Scenario Modeling Practices*.
 Advisers: Peter Jones with 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. . . . 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 . . . facilitate breakthroughs of understanding, consensus for action, and the coordination of social power.
 - ◇ **University of Illinois**, Champaign-Urbana, IL
 B.Sc. in Computer Science with Honors, May 2002.
 Application Sequence: *Manufacturing Engineering*.
- Publications
- ◇ **2014** Cassel, J. Probabilistic Programming with Stochastic Memoization: Implementing non-parametric bayesian inference. *Mathematica Journal*, 16:1.
 - ◇ **2014** Cassel, J. Non-parametric stakeholder discovery: A process for mitigating risk governance deficits through open-ended protocols. In Hsu, W. H., editor, *Emerging Methods in Predictive Analytics: Risk Management and Decision-Making*, pages 97-126. IGI Global, Hershey, PA.
 - ◇ **2014** Cassel, J. The Methodological Unboundedness of Limited Discovery Processes. *FORMacademisk*, 7:4.
 - ◇ **2016** Cassel, J. Wolfram|Alpha: A Computational Knowledge "Search" Engine. In Lee, N., editor, *Google It: Total Information Awareness*, pages 267-299. Springer, New York, NY.
- Skills and Interests
- ◇ **Analytical Techniques** Stakeholder analysis, non-parametric Bayesian inference, decision-theoretic planning, online simulation, recurrent neural networks, and domain-specific languages.
 - ◇ **Programming Languages**
 - **Professional experience in** Java (including Eclipse, ANTLR, ANTLRWorks, and Spring), Python, Common Lisp (including KnowledgeWorks), MySQL, and Wolfram Language (Mathematica).
 - **Projects using** SQL, Modelica, Go, HTML, Ruby, C++, Visual Basic, C, GAP, MIPS assembler, Matlab, Processing, Scheme, Erlang, and Maude.
 - **Brief familiarity with** Perl, Javascript, Prolog, X86 assembler, and many others.
 - ◇ **Specialized Domain Toolkits** Development within Wolfram SystemModeler, ArcMap (including ArcObjects), D2K, Django, and RubyOnRails.
 - ◇ **Information systems** Experience with geodatabases, text-processing pipelines, the data-mining process, and test-driven development. Familiarity with factory simulation, reliability and quality control, and computer numerical control of machine tools.

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