

# John Benjamin Cassel

- Current Direction** I'm interested in improving infrastructure by making our places and activities more legible and situated within the social, cultural, economic, and ecological criteria we might use to shape a better future.
- Skills**
- ◇ **Programming Languages**
    - **Professional experience in** Java (including Eclipse, ANTLR, Spring, etc.), Common Lisp (including KnowledgeWorks), and Mathematica
    - **Projects using** SQL, C++, Visual Basic, C, GAP, MIPS assembler, Matlab, Processing, Scheme, Erlang, and Maude
    - **Familiarity with** Python, Perl, Ruby, Javascript, Prolog, X86 assembler, and many others
  - ◇ **Specialized Domain Toolkits** Development within ArcMap (including ArcObjects), 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
- Work experience**
- ◇ **R&D Consultant**, Wolfram|Alpha LLC, Champaign, IL (Fall 2009-Current)
    - Develop and maintain database infrastructure.
  - ◇ **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.

john@john-benjamin-cassel.com  
512 W. Green St.  
Apt.103  
Champaign, IL 61820  
(217) 766-8158

- 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)
  - 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
  - ◇ **Ontarito College of Art & Design**, Toronto, ON.
 

Working on M.Des. in Strategic Foresight and Innovation.  
Project Focus: *Social Logistics*. How can the tools of social informatics, especially tagging and scoring systems, be embedded in our material infrastructure, affording the individual's assessment and agency?
  - ◇ **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*. The thesis, along with the  $R^2LUCK$  independent project, 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*.
- Independent Projects
  - ◇ **Scenario Connector** (Spring 2007 – Fall 2008)
 

This project aimed towards developing overlapping scenarios for possible futures of our technological infrastructure, which when combined with blogjects, geotags, and other interventions from ubiquitous computing, provides a picture of how our actions shape the future to all who wish.
  - ◇  **$R^2LUCK$ : Reducing Reinforcement Learning Under Classified Knowledge** (Spring 2005 – Fall 2006)
 

This project looked at injecting knowledge into reinforcement learning, using the theory of machine-learning reductions.
- Interests
  - ◇ **Problems** Sustainable and distributed manufacturing, online deliberation of infrastructure, read/write urbanism, open-source security and surveillance, social resilience and disaster relief
  - ◇ **Techniques** Online and/or transductive models of machine learning, streaming data-mining, decision-theoretic planning, online simulation, recurrent and hierarchical neural networks, distributed systems theory, temporal logic, syntactic transformations and network analysis.
  - ◇ **Theoretical Grounding** Futures studies, critical design, participatory GIS, spime technoculture, schizogeography, network-oriented architecture, postmodernist readings of science

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