

## **Michael Bobak Knowledge Engineer / Research Programmer**

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### **Summary**

[Research Programming](#) starting with (bio)[physical](#) simulation/viz, adding AI study and years of [Knowledge-Engineering \(edu/gov/com\)](#) work. Experience with [Knowledge-Based](#) aids for process improvement to [teaching\(Intl.Tutoring\)](#). [AI skills include: Knowledge-Representation and Reasoning, Rules, Knowledge-Acquisition, NLP, ML, ...](#)

### **Work Experience**

#### **Freelance Consultant**

##### **July 2011-Present, San Francisco, CA**

Develop [startup](#) ideas, work on a Proof of Concept [for Patient Data Mining Cluster patent application](#) that I helped start at ucsf.edu, work [on an assisted eco-sim/modeling](#) environment in Lisp, and [semantic web \(industrial\) IoT](#) advice.

#### **Apollo Education Group, Architect, Adaptive Learning Platform**

##### **Oct 2010 - Jul 2011, San Francisco, CA**

Conceptually annotate study material and tests for automated remediation, instrument classroom to learn from use [Hadoop, Lisp, [KM](#)]

#### **UCSF Programmer/Analyst III**

##### **Sept 2007-Oct 2010, San Francisco, CA**

Medical-Informatics [research](#) (relating to clinical-trials) in Lisp/KM, and Natural Language Processing in Java; [paper](#) with Stanford [group](#); [ontology](#) dev/use [Lisp, [KM](#), ..]

#### **Freelance Knowledge Engineer/ Research-Programmer**

##### **Feb 2001 Sept 2007, Chicago and Boston**

[mindbox.com](#) 3/02-10/02. [used Art\*Enterprise] See: [Ocwen Mindbox](#) Worked up to half-time for [cas.dis.anl.gov](#) 5/03-5/04 [Java Simulation] Worked full-time 8/03-~05([verizon](#))[labs.gte.com](#), Model-Based-Diagnosis on a national scale. [Art \*Enterprise] See: [aaai.org/Papers/IAAI/1996/IAAI96-287.pdf](#) Bioinformatics/control [contract](#) 11/04-12/05 [CLIPS&Protege.stanford.edu/Java/DB] Control of perfusion pumps on light microscope sample, monitoring incl. Machine-vision, Bio-ontology /reasoning/Kn-mngt for the experiment setup. & Grant proposal work. Worked for CME.com 2/06-06/06 (re)organizing trade-data validation code. [CLIPS/Jess] Signal-Processing/Machine-Learning (startup) 06/06-[Lisp/etc] Hospital Informatics/Machine-Learning ghx.com 02/07-05/07-[Lisp], Machine Learning speedup for financial-scientific [Lisp]

#### **Knowledge Based Systems Lab, Senior Research Programmer**

##### **Jun 1998-Feb 2001, Urbana, IL**

Organize many levels of a very large knowledge based simulation projects. Brought over 18 programmers together to deliver a coherent product. Ran weekly group meetings, down to help solving any problem. Hiring, demo, design, install trips, prototyping to lead project direction. Taught group of 6 how to use a Rule-Based-shell for a reasoner-rewrite in Art\*Enterprise. Projects included: Simulation-based, Intelligent Tutoring System (ITS) & Real-Time control system. Being used in classroom, real life testing, presented at IAAI99 'Automated Instructor Assistant for Ship Damage Control' - The system teaches Navy officers how to save a simulated ship in crisis. A variant was developed to catch real-time crisis conditions and suggest solutions [www.dwilkins.org/members.htm](http://www.dwilkins.org/members.htm)

### **Brightware, Knowledge Engineer**

**Oct 1996-Jun 1998, Chicago, IL**

Helped develop and install their very first product (intelligent email reply). Worked between development and consulting. Helped on several Knowledge-Based business applications. Helped with several deployed Knowledge-Based business applications (ie. financial: mortgage, web based job finder). [Art\*Enterprise] See: [www.brightware.com/eservice\\_solutions/](http://www.brightware.com/eservice_solutions/) & later 1/2 year for the new version of the company: Mindbox.

### **Institute of Learning Sciences, Lead Programmer/Analyst**

**Feb 1996-Aug 1996, Evanston, IL**

Wrote Lisp code (mainly GUI) for Qualitative Research Group. Learned more about Qualitative/Quantitative Simulation, Model-Based Reasoning, Intelligent-Tutoring-Systems, and general Lisp programming.

See: [www.qrg.northwestern.edu/projects/NSF/Cyclepad/abouttcp.htm](http://www.qrg.northwestern.edu/projects/NSF/Cyclepad/abouttcp.htm)

### **Argonne National Lab (EAD and DIS groups), Software Engineer**

**Feb 1993-Feb 1996, Argonne, IL**

Wrote fielded Expert System by myself at the end of grad-school. [in Lisp rule-shell then CLIPS] Prototyped communication and control of distributed simulation. [in CLIPS PVM etc] Agent wrapping of simulations with CLIPS+PVM, to describe then mix and match them. Also used C++, Smalltalk, FORTRAN with PVM; Other work as needed. Algo/Viz/Etc. Written up in a book about innovative distributed object application. See: [www.dis.anl.gov/DEEM\\_HLAsim](http://www.dis.anl.gov/DEEM_HLAsim) [www.dis.anl.gov/DEEM/DIAS](http://www.dis.anl.gov/DEEM/DIAS) [mike.bobak.googlepages.com/diaswp.pdf](http://mike.bobak.googlepages.com/diaswp.pdf)  
Later some work for new subgroup of dis: [cas.dis.anl.gov](http://cas.dis.anl.gov).

## **Education**

University of Illinois, Urbana-Champaign

MS Biophysics & Computational Biology with AI, 1990-93 / **Research Assistant / Research Programmer**

BS Physics, BS Biophysics, 1983-88, dept. distinction / **Research Programmer**  
( $\frac{1}{2}$  time with allied lab)

## **Recent Training:**

Coursera:

[Data analysis](#)

[Web intelligence](#) (with distinction)

[Data Science](#) (with distinction)

[Machine Learning](#) (with distinction)

[Discrete Optimization](#) (audit)

Other:

[Semantic Web](#)

[Design Thinking](#)

[Knowledge Engineering](#)

[Knowledge Engineering](#)

[w/Semantic Web technology](#)

**Early Training:** Several semesters of grad AI @UIUC

## **Professional Organizations**

[AAAI \(Association for the Advancement of Artificial Intelligence\)](#) life-member.

[IEEE \(Institute of Electrical and Electronics Engineers\)& Computer Society](#) 10yrs