

Michael Bobak

Knowledge-Engineer / Research-Programmer

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[@MBstream](#)

Summary

[Research-Programmer](#) starting with [physical-science](#) simulation, adding AI study and years of [Knowledge-Engineering](#) work as well ([edu/gov/com](#)).

Focus on [Knowledge-Based](#) aids, for process improvement to [teaching](#). [AI](#): [Knowledge-Representation and Reasoning](#), [Rules](#), [Kn-Acq](#), [NLP](#), [ML](#), ...

Skills & Expertise

[AI](#)
[Artificial Intelligence](#) [Adaptive Systems](#) [Business Rules](#) [Case-Based Reasoning](#) [Conceptual Modeling](#) [Data Mining](#) [Intelligent Agents](#) [Intelligent Systems](#) [Knowledge Engineering](#) [Knowledge-based Systems](#) [Machine Learning](#) [Natural Language Processing](#) [Natural Language Understanding](#) [Ontology Engineering](#) [Rules](#) [Semantic Web](#) [Semantics](#) [Causal Inference](#) [Composite Applications](#) [Computational Intelligence](#) [Controlled Vocabularies](#) [Data Analysis](#) [Decision Modeling](#) [Expert Systems](#) [Information Access](#) [Information Extraction](#) [Information Retrieval](#) [Intelligent Tutoring Systems](#) [Knowledge Representation](#) [Logic Programming](#) [Mathematical Logic](#) [Mathematical Programming](#) [Ontology Development](#) [Rules Engines](#) [SNOMED](#) [Semantic Search](#) [Semantic Technologies](#) [Taxonomy Development](#) [Text Classification](#)

Science
[Research](#) [Scientific Software](#) [Scientific Computing](#) [Scientific Visualization](#) [Simulation](#) [Computational Mathematics](#) [Biophysics](#) [Computational Biology](#)

Others
[Cloud Computing](#) [MapReduce](#) [Hadoop](#) [Dynamic Languages](#) [Exploratory programming](#) [Common Lisp](#) [other Languages](#)

Work Experience

Freelance San-Francisco, CA

consultant

July 2011 Present

Develop startup idea/s, starting with working on a ProofOfConcept for Patient DataMiningCluster patent application that I helped start at ucsf.edu

ApolloGrp.edu San-Francisco, CA

Architect , Adaptive Learning Platform

Oct 2010 May 2011

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

UCSF.edu San-Francisco, CA

Programmar/Analyst III

Sep 2007 Oct 2010

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

Freelance Chicago/Boston

Knowledge-Engineer/ Research-Programmer

Feb 2001 Sep 2007

[mindbox.com](#) 3/02-10/02. [used Art*Enterprise] See: [Ocwen_Mindbox](#) Worked up to half-time for <http://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], MachineLearning speedup for financial-scientific [Lisp]

kbs.ai.UIUC.edu Urbana, IL

(Senior) Research Programmer (Knowledge Based Systems Lab)

Jun 1998 Feb 2001

University of Illinois Urbana-Champaign, IL Organize many levels of a very large knowledge based simulation projects. Brought over 18 programmers together to deliver a coherent product. Ran weekly (sub)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 <http://www.dwilkins.org/members.htm>

Brightware out of Chicago, IL

Knowledge-Engineer

Oct 1996 Jun 1998

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: http://www.brightware.com/eservice_solutions/ More recently I worked 1/2year for the new version of the company: Mindbox.

Institute of Learning Sciences Evanston, IL

Lead Programmer/Analyst

Feb 1996 Aug 1996

Wrote Lisp code (mainly GUI) for Qualitative Research Group. Learned more about Qualitative/Quantitative Simulation, Model-Based Reasoning, Intelligent-Tutoring-Systems, & general Lisp programming. See: <http://www.qrg.northwestern.edu/projects/NSF/Cyclepad/aboutcp.htm>

Argonne National Lab Argonne, IL

Software Engineer (EAD then DIS groups)

Feb 1993 Feb 1996

Wrote fielded Expert System by myself at the end of grad-school. [in Lisp rule-shell then CLIPS] Prototyped communication & 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: <http://www.dis.anl.gov/DEEM/HLAsim> <http://www.dis.anl.gov/DEEM/DIAS> mike.bobak.googlepages.com/diaswp.pdf _ More recently I worked part-time for the new subgroup of dis: cas.dis.anl.gov.

UIUC.edu Urbana, IL

Graduate Research Assistant /Research Programmer

Jan 1990 Jan 1993

Wrote molecular graphics package used in classes & for publications. [in C] Used machine-learning techniques for protein structure prediction.

Wrote thesis on Knowledge-Based Simulation Environment. [Lisp/OPS5/C] Overseen by heads of the NCSA CompBio group and head of Biophysics at the time. see: web.bilkent.edu.tr/nca/Apps/CBdir.html

[National Center for Supercomputing Applications]NCSA,Uof IL,GIST Urbana/Savoy, IL

Programmer/Consultant

Apr 1989 Dec 1989

Suggested scientific software path for Software Tools Group of NCSA; Wrote molecular viz code for a professor. Wrote testing code for Global Info Systems Tech. [in C]

Shearson Lehman Hutton London, England

Programmer (Research Computing)

Oct 1988 Apr 1989

Maintained financial databases & daily report information. Organized worldwide mailing system. Wrote statistics code for stock predictions. [MUMPS and Maths-package]

US Army Corp. of Eng. Research Lab Champaign, IL

Research Programmer (Modeling then Acoustics teams)

Mar 1982 Aug 1988

Provided research support from start to finish. [FORTRAN] Wrote and ran computer simulation code, compared output with field data. Did field measurements to back up predictions. (Team/Self; Local/US/World-wide) My work went into several [published papers](#). GRASS: <http://grass.fbk.eu/>

Education

University of Illinois, Urbana-Champaign

MS Biophysics & Computational Biology with AI, 1990-93

BS Physics, BS Biophysics, 1983-88, dept. distinction

Professional Organizations:

- [AAAI \(Association for the Advancement of Artificial Intelligence\) life-member.](#)
- [IEEE \(Institute of Electrical and Electronics Engineers\)& Computer Society 10yrs.](#)
- also: [meetup.com](#), [linkedin-groups](#), & [github opensource examples](#)

Programming Languages/...:

<u>19+ years overall</u>	<u>Object Orientated</u> [14+ years]	<u>Rule-Based KnRep& Reasoning:</u> [10+ years]:	<u>Libs:</u>	<u>Databases:</u>	<u>Operating-Systems:</u>
C(6+ years) FORTRAN(6+ yrs)	Smalltalk (~1 yr) C+(1+yr)	OPS5 , Prolog , GoldWorks (<1yr)	Viz: OpenGL (3+ yrs)	MS-Jet/SQL, MySQL	NeXTSTEP, MS(NT..XP) (8+ yrs)
Scheme (~1 yr) MUMPS (1/2yr)..	Python(< 1yr), Java (1+ yr)	CLIPS (4+yrs), (4+years)	HPC: PVM (1+yr)	PostgreSQL, ORDB	UNIX (18+ years), incl. GNULinux

Lisp (7+yrs of CL 10+yrs of others)	CLOS [CL -Object- System]	Knowledge- Machine (3+years), JESS (1 yr), Protege (6+yrs)	WS :Tomcat/Axis SOAP/REST	Graph&triple persistance &other NoSQL	OS-X .Darwin(10+ years)
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