

Michael Bobak

Knowledge-Engineer / Research-Programmer

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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](#) [Case-Based Reasoning](#)

[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](#) [Model-based reasoning](#)

[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](#) [Physics](#)

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

[Common Lisp](#) [other Languages](#)

WORK EXPERIENCE

Present July 2011	<p>Freelance <i>San-Francisco, CA</i></p> <p>consultant</p> <p>Develop startup idea/s, starting with working on a ProofOfConcept for Patient DataMiningCluster patent application that I helped start at ucsf.edu</p>
May 2011 Oct 2010	<p>ApolloGrp.edu <i>San-Francisco, CA</i></p> <p>Architect , Adaptive Learning Platform</p> <p>Conceptually annotate study material & tests for automated remediation, instrument classroom to learn from use [Hadoop, Lisp, KM]</p>
Oct 2010 Sep 2007	<p>UCSF.edu <i>San-Francisco, CA</i></p> <p>Programmar/Analyst III</p> <p>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, ..]</p>
Sep 2007 Feb 2001	<p>Freelance <i>Chicago/Boston</i></p> <p>Knowledge-Engineer/ Research-Programmer</p> <p>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]</p>
Feb 2001 Jun 1998	<p>kbs.ai.UIUC.edu <i>Urbana, IL</i></p> <p>(Senior) Research Programmer (Knowledge Based Systems Lab)</p> <p>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</p>

<http://www.dwilkins.org/members.htm>

Jun 1998
Oct 1996

Brightware *out of Chicago, IL*

Knowledge-Engineer

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.

Aug 1996
Feb 1996

Institute of Learning Sciences *Evanston, IL*

Lead Programmer/Analyst

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>

Feb 1996
Feb 1993

Argonne National Lab *Argonne, IL*

Software Engineer ([EAD](#) then [DIS](#) groups)

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.

Jan 1993
Jan 1990

UIUC.edu *Urbana, IL*

Graduate Research Assistant /Research Programmer

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/ncsa/Apps/CBdir.html

Dec 1989
Apr 1989

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

Programmer/Consultant

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]

Apr 1989

Oct 1988

Shearson Lehman Hutton *London, England*

Programmer (Research Computing)

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

Aug 1988

Mar 1982

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

Research Programmer (Modeling then Acoustics teams)

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</u>	<u>Rule-Based KnRep&</u>	<u>Libs:</u>	<u>Databases:</u>	<u>Operating-Systems:</u>
	<u>Orientated</u>	<u>Reasoning: [10+</u>			
	<u>[14+ years]</u>	<u>years]:</u>			
C(6+ years)	<u>Smalltalk</u> (~1 yr)	<u>OPSS, Prolog,</u>	<u>Viz: OpenGL</u> (3+ yrs)	MS-Jet/SQL, MySQL, NeXTSTEP, MS(NT..XP)	(8+ yrs)
FORTRAN(6+ yrs)	C++(1+yr)	<u>GoldWorks</u> (<1yr)			
Scheme (~1 yr) MUMPS (1/2yr)..	Python(< 1yr), Java	<u>CLIPS</u> (4+yrs), <u>(4+yrs)</u>	<u>HPC: PVM</u> (1+yr)	PostgreSQL, <u>ORDB</u>	UNIX (18+ years), incl. <u>GNU Linux</u>
<u>Lisp</u> (7+yrs of <u>CL</u>	<u>CLOS</u> [<u>CL</u> -Object-	<u>Knowledge-</u>	<u>WS: Tomcat/Axis</u>	<u>Graph & triple</u>	<u>OS-X</u> . Darwin(10+
10+yrs of others)	System]	<u>Machine</u> (3+yrs),	SOAP/REST	<u>ersistence</u>	years)
		<u>JESS</u> (1 yr),		& other <u>NoSQL</u>	
		<u>Protege</u> (6+yrs)			