

Michael Bobak

Knowledge-Engineer / Research-Programmer

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SUMMARY

[Research-Programmer](#) starting with (bio)[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	Freelance <i>San-Francisco, CA</i> consultant
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Develop startup idea/s, starting with working on a ProofOfConcept for Patient DataMiningCluster patent application that I helped start at ucsf.edu. Some eco-simulation in Lisp, and SemWeb (industrial) IoT investigation.

Jul 2011

ApolloGrp.edu *San-Francisco, CA*

Oct 2010

Architect, Adaptive Learning Platform

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

Oct 2010

UCSF.edu *San-Francisco, CA*

Sep 2007

Programmer/Analyst III

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

Sep 2007

Freelance *Chicago/Boston*

Feb 2001

Knowledge-Engineer/ Research-Programmer

[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], MachineLearning speedup for financial-scientific [Lisp]

Feb 2001

kbs.ai.UIUC.edu *Urbana, IL*

Jun 1998

(Senior) Research Programmer ([Knowledge Based Systems Lab](#))

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 www.dwilkins.org/members.htm

Jun 1998

Brightware *out of Chicago, IL*

Oct 1996

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 1/2 year for the new version of the company: Mindbox.

Aug 1996

Institute of Learning Sciences *Evanston, IL*

Feb 1996

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

Argonne National Lab *Argonne, IL*

Feb 1993

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

UIUC.edu *Urbana, IL*

Jan 1990

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: 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> <u>[14+ years]</u>	<u>Rule-Based KnRep& Reasoning: [10+ years]:</u>	<u>Libs:</u>	<u>Databases:</u>	<u>Operating-Systems:</u>
C(6+ years) FORTRAN(6+ yrs) Scheme (~1 yr) (1/2yr)..	Smalltalk (~1 yr) C++(1+yr) MUMPS Python(< 1yr), Java (1+ yr)	OPS5 , Prolog , GoldWorks (<1yr) CLIPS (4+yrs), ART (4+yrs)	Viz: OpenGL (3+ yrs) HPC: PVM (1+yr)	MS-Jet/SQL, MySQL PostgreSQL, ORDB	NeXTSTEP, MS(NT..XP) (8+ yrs) UNIX (18+ years), incl. GNU Linux
Lisp (7+yrs of CL 10+yrs of others)	CLOS [CL - Object-System]	Knowledge-Machine (3+yrs), JESS (1 yr), Protege (6+yrs)	WS :Tomcat/Axis SOAP/REST	Graph&triple persistence &other NoSQL	OS-X , Darwin(10+ years)

[as a pdf](#) & [latest-talk](#)