**Michael Bobak**

Knowledge-Engineer / Research-Programmer in San Francisco, California

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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&Reasoning, Rules, Kn-Acq, NLP, ML, et.al.

WORK EXPERIENCE

**Freelance Consultant,** San-Francisco, CA

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, &then an idea using info-retrieval associated with concept tagging and search.

**Apollo Group,** 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]

**University of California, San Francisco**, San-Francisco, CA

Programmer/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 Consultant**, Chicago/Boston

Knowledge Engineer/Research Programmer / Feb 2001 - Sep 2007

mindbox.com 3/02-10/02. [used Art\*Enterprise] See: Ocwen\_Mindbox Worked upto 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]

**University of Illinois Urbana-Champaign - Knowledge Based Systems Lab,** Urbana, IL

Senior Research Programmer (kbs.ai.UIUC.edu) / Jun 1998 - Feb 2001

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**, 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.

**Northwestern University - 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 and 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.

**University of Illinois Urbana-Champaign,** 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/ncsa/Apps/CBdir.html [National Center for Supercomputing Applications]NCSA,Uof IL,GIST Urbana/Savoy, IL

**University of Illinois Urbana-Champaign,** Champaign, 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 Corps of Engineers Research Lab**, Champaign, IL

Research Programmer (Modeling and 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 Ilinois, Urbana-Champaign

MS Biophysics & Computational Biology with AI, 1990-93

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

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](http://www.meetup.com/balisp/members/5734460/), [linkedin-groups](http://www.linkedin.com/in/michaelbobak), & [github opensource examples](https://github.com/MBcode)

SKILLS & EXPERTISE

[AI](http://www.linkedin.com/skills/skill/Computational_Mathematics?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof)

[Artificial Intelligence](http://www.linkedin.com/skills/skill/Artificial_Intelligence?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof) [Adaptive Systems](http://www.linkedin.com/skills/skill/Adaptive_Systems?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof) [Business Rules](http://www.linkedin.com/skills/skill/Business_Rules?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof) [Case-Based Reasoning](http://www.linkedin.com/skills/skill/Case-Based_Reasoning?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof) [Conceptual Modeling](http://www.linkedin.com/skills/skill/Conceptual_Modeling?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof) [Data Mining](http://www.linkedin.com/skills/skill/Data_Mining?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof) [Intelligent Agents](http://www.linkedin.com/skills/skill/Intelligent_Agents?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof) [Intelligent Systems](http://www.linkedin.com/skills/skill/Intelligent_Systems?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof) [Knowledge Engineering](http://www.linkedin.com/skills/skill/Knowledge_Engineering?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof) [Knowledge-Based Systems](http://www.linkedin.com/skills/skill/Knowledge-based_Systems?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof) [Machine Learning](http://www.linkedin.com/skills/skill/Machine_Learning?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof) [Natural Language Processing](http://www.linkedin.com/skills/skill/Natural_Language_Processing?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof) [Natural Language Understanding](http://www.linkedin.com/skills/skill/Natural_Language_Understanding?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof) [Ontology Engineering](http://www.linkedin.com/skills/skill/Ontology_Engineering?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof) [Rules](http://www.linkedin.com/skills/skill/Rules?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof) [Semantic Web](http://www.linkedin.com/skills/skill/Semantic_Web?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof) [Semantics](http://www.linkedin.com/skills/skill/Semantics?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof) [Causal Inference](http://www.linkedin.com/skills/skill/Causal_Inference?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof) [Composite Applications](http://www.linkedin.com/skills/skill/Composite_Applications?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof) [Computational Intelligence](http://www.linkedin.com/skills/skill/Computational_Intelligence?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof) [Controlled Vocabularies](http://www.linkedin.com/skills/skill/Controlled_Vocabularies?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof) [Data Analysis](http://www.linkedin.com/skills/skill/Data_Analysis?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof) [Decision Modeling](http://www.linkedin.com/skills/skill/Decision_Modeling?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof) [Expert Systems](http://www.linkedin.com/skills/skill/Expert_Systems?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof) [Information Access](http://www.linkedin.com/skills/skill/Information_Access?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof) [Information Extraction](http://www.linkedin.com/skills/skill/Information_Extraction?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof) [Information Retrieval](http://www.linkedin.com/skills/skill/Information_Retrieval?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof) [Intelligent Tutoring Systems](http://www.linkedin.com/skills/skill/Intelligent_Tutoring_Systems?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof) [Knowledge Representation](http://www.linkedin.com/skills/skill/Knowledge_Representation?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof) [Logic Programming](http://www.linkedin.com/skills/skill/Logic_Programming?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof) [Mathematical Logic](http://www.linkedin.com/skills/skill/Mathematical_Logic?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof) [Mathematical Programming](http://www.linkedin.com/skills/skill/Mathematical_Programming?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof) [Ontology Development](http://www.linkedin.com/skills/skill/Ontology_Development?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof) [Rules Engines](http://www.linkedin.com/skills/skill/Rules_Engines?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof) [SNOMED](http://www.linkedin.com/skills/skill/SNOMED?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof) [Semantic Search](http://www.linkedin.com/skills/skill/Semantic_Search?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof)  [Semantic Technologies](http://www.linkedin.com/skills/skill/Semantic_Technologies?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof) [Taxonomy Development](http://www.linkedin.com/skills/skill/Taxonomy_Development?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof) [Text Classification](http://www.linkedin.com/skills/skill/Text_Classification?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof)

Science

[Research](http://www.linkedin.com/skills/skill/Research?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof) [Scientific Software](http://www.linkedin.com/skills/skill/Scientific_Software?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof) [Scientific Computing](http://www.linkedin.com/skills/skill/Scientific_Computing?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof) [Scientific Visualization](http://www.linkedin.com/skills/skill/Scientific_Computing?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof) [Simulation](http://www.linkedin.com/skills/skill/Simulation?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof) [Computational Mathematics](http://www.linkedin.com/skills/skill/Computational_Mathematics?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof) [Biophysics](http://www.linkedin.com/skills/skill/Biophysics?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof) [Computational Biology](http://www.linkedin.com/skills/skill/Computational_Biology?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof) [Physics](http://www.linkedin.com/skills/skill/Physics?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof)

Others

[Cloud Computing](http://www.linkedin.com/skills/skill/Cloud_Computing?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof) [MapReduce](http://www.linkedin.com/skills/skill/MapReduce?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof) [Hadoop](http://www.linkedin.com/skills/skill/Hadoop?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof) [Dynamic Languages](http://www.linkedin.com/skills/skill/Dynamic_Languages?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof) [Exploratory\_programming](http://en.wikipedia.org/wiki/Exploratory_programming) [Common Lisp](http://www.linkedin.com/skills/skill/Common_Lisp?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof) [*other Languages*](#Programming_Languages)

PROGRAMMING LANGUAGES [19+ yrs]

C(6+ years) FORTRAN(6+ yrs) Scheme(~1 yr) MUMPS (1/2yr) Lisp(7+yrs of CL 10+yrs of others)

OOP[14+ yr]: Smalltalk(~1 yr) C++(1+ yr) Python(< 1yr) Java(1+ yr) CLOS[CL -Object-System](7+)

Rule-Based Languages, KnRep&Reasoning: [10+ years]: OPS5[OfficialProductionSystem5], Prolog, GoldWorks(< 1 yr), CLIPS(4+yrs),ART-Enterprise(4+years), Knowledge-Machine(3+years), JESS(1 yr), Protege(6+yrs)

Libs: Viz: OpenGL(3+ yrs) HPC: PVM (1+yr) WS:Tomcat/Axis SOAP/REST

Databases: MS-Jet/SQL MySQL PostgreSQL ORDB NOSQL Graph&triple persistance

Operating-Systems: NeXTSTEP MS(NT..XP)(8+ yrs), UNIX(18+ years)incl.GNULinux OS-X.Darwin(10+ years)

College Course work related to Artificial Intelligence (AI): Introduction to Artificial Intelligence, Pattern Recognition & Machine Learning, Programming Language Principles, Special Topics in Neural Networks, Mathematical Modeling & Visualization, ComputerInference& KnowledgeAcquisition, Design of Computer Problem Solvers, Computer Models of Cognitive Processes, AI-2 <http://aima.cs.berkeley.edu/> , Mechanized Mathematical Inference -(1/2 of), Human Computer Interaction(HCI), Building Problem Solvers

College Extracurricular Experience: Physics Society officer, (vp/etc) 3yrs; Community Radio Station show, 2 yrs ..

Seeking creative computational problem-solving post as either a: Knowledge-Engineer, Scientific/Research-Programmer, Systems/Data/Information-Analyst/Architect, Scientist, Multi-disciplined Research/Software-Engineer. I solve problems using my varied background, I don't just program; If all you have is a spec or something to be tended, I'm not interested.

I continue to further my knowledge/experience with Artificial Intelligence/Modeling&Simulation techniques; through stimulating peer interaction, challenging projects. Particular interest in a Knowledge-Based-Modeling&Simulation Environment, Assisted Problem-Solving-Environments/Big-Data-Science.

Knowledge -(Representation/Reasoning/Mngt) for cooperative Scientific modeling[e-Science, Semantic(Web/Grid)Services] via multi-use Model-Based-Reasoning/descriptive(layer of logic) to use preconstructed applications&data. Prefer dynamic(event/data-driven)language/environments. Having a Lisp(like)language, use of AI techniques&a science/fun domain, would do it for me.