

Michael Bobak 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.** 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 pre-constructed 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.

Educational Background **M.S. Biophysics & Computational Biology,** (with focus in **AI**) [B.S. Physics and B.S. Biophysics]



University of Illinois, Urbana-Champaign, May 1988 dept-distinction, October 1993 Thesis: *Molecular Simulation with Expert Rules* (in OPS5/Lisp/C)

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Work Experience:

Freelance Consultant: **SF, CA 7/2011-present** 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.



Architect – **Adaptive Learning Platform ApolloGrp.edu San-Francisco, CA 10/2010-7/2011**

Conceptually annotate study material & tests for automated remediation, instrument classroom to learn from use.

used Lisp/KM Hadoop



Programmer/Analyst III **University of California San-Francisco 9/2007-6/2010** <http://rctbank.ucsf.edu/>

Medical-Informatics research(relating to **clinical-trials**) in **Lisp/KM, Natural-Language-Processing in Java/etc;** **paper** with **Stanford group;** ontology dev/use: <http://rctbank.ucsf.edu/home/ergo> ..



Knowledge Engineer Freelance Consultant **Chicago, IL 2/2001-9/2007** Rule-based,Case-based,Machine-learning/Data-Mining, &any Lisp work.



<http://mindbox.com/> 3/02-10/02. [used Art*Enterprise] See: **Ocwen Mindbox** Worked up to 1/2 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: <http://www.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

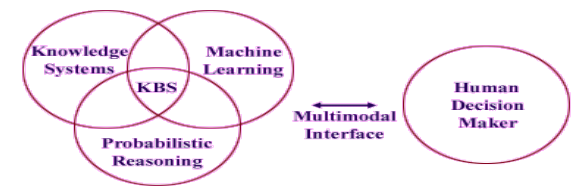
(re)organizing trade-data validation code. [CLIPS/Jess] **Signal-Processing/Machine-Learning (startup)** 06/06-[Lisp/etc] Protege&Lisp Hospital

Informatics/Machine-Learning **ghx.com** 02/07-05/07-[Lisp], Machine Learning speedup for financial-scientific [Lisp];

(Senior) Research Programmer (Knowledge Based Systems Lab) 6/1998-2/2001

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>



Knowledge Engineer Brightware

Novato, CA

10/1996-6/1998



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.

Lead Programmer/Analyst QualitativeReasoningGroup Evanston, IL 2/1996-8/1996

The Institute for the Learning Sciences

Inst of Learning Sciences Wrote Lisp code (mainly GUI) for Qualitative Research

NORTHWESTERN UNIVERSITY

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/>



Software Engineer (EAD then DIS groups) Argonne National Lab Argonne, IL

2/1993-2/1996

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> <http://mike.bobak.googlepages.com/bobak/diaswp.pdf> Later for the new subgroup of dis: cas.dis.anl.gov.

Graduate Research Assistant /Research Programmer University of Illinois Urbana-Champaign, IL 1/1990-



1/1993 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: <http://web.bilkent.edu.tr/ncsa/Apps/CBdir.html>

Programmer/Consultant [National Center for Supercomputing Applications]NCSA, Uof IL, GIST Urbana-Champaign, 4/1989-12/1989

Suggested scientific software path for SoftwareToolsGroup of NCSA; Wrote molecular viz code@uiuc. Wrote testing code for GlobalInfoSystemsTech. [in C]

Programmer (Research Computing) [Shearson Lehman Hutton](#) London, England 10/1988-4/1989 Maintained financial databases & daily report information. Organized worldwide mailing system. Wrote statistics code for stock predictions. [MUMPS & Maths-package]



Research Programmer [Construction Engineering Research Lab](#)

Urbana-Champaign, IL 3/1982-8/1988(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. http://adsabs.harvard.edu/cgi-bin/nph-bib_query?1987ASAJ...81..638J & 1987nce..conf..215R



US Army Corps of Engineers
Engineer Research and Development Center
Construction Engineering Research Laboratory

<http://www.cecer.army.mil/td/tips/pub/details.cfm?PUBID=1452&TOP=1> GRASS: <http://grass.fbk.eu/>

Early summary: Started as a research-programmer in high-school, through both undergrad-degrees. Then a [work-abroad](#), and work back home before starting grad-school. Crafted a [Computational-Science](#) degree, and went to Chicago for [DOE](#) work.

Programming Skills [19+ yrs]	Object Orientated [14+ yr]	Libs:	Databases:	Operating-Systems:
C (6+ years) FORTRAN (6+ yrs)	Smalltalk (~1 yr) C++ (1+ yr)	Viz: OpenGL (3+ yrs)	MS-Jet/SQL, MySQL, PostgreSQL	NeXTSTEP, MS(NT..XP) (8+ yrs)
Scheme (~1 yr) MUMPS (1/2yr)..	Python(< 1yr), Java (1+ yr)	HPC: PVM (1+yr)	ORDB_noSQL:mongo/redis	UNIX (18+ yrs), incl. GNU/Linux
Lisp (7+yrs of CL 10+yrs of others)	CLOS [CL -Object-System]	WS :Tomcat/Axis SOAP/REST	Graph&triple persistence	OS-X .Darwin(10+ years)

Rule-Based Languages, KnRep&Reasoning: [10+ years]:

[OPS5](#)[[OfficialProductionSystem5](#)], [Prolog](#), [GoldWorks](#)(< 1 yr), [CLIPS](#)(4+yrs),[ART-Enterprise](#)(4+yrs), [Knowledge-Machine](#)(3+yrs), [JESS](#)(1 yr), [Protege](#)(6+yrs)

College Course work related to	Artificial Intelligence (AI):	Recent Training:
Pattern Recognition & Machine Learning	Programming Language Principles	Coursera: Data analysis Other:
Special Topics in Neural Networks	<i>Mathematical Modeling & Visualization</i>	Web intelligence (with distinction) Semantic Web , Design Thinking
Introduction to Artificial Intelligence	Building Problem Solvers	Data Science (with distinction) Knowledge Engineering
Mechanized Mathematical Inference <small>-(1/2 of)</small>	<i>Human Computer Interaction(HCI)</i>	Knowledge Engineering w/Semantic Web technology
Computer Inference&Knowledge Acquisition	Design of Computer Problem Solvers	Machine Learning (with distinction) other research as needed
Computer Models of Cognitive Processes	AI-2 http://aima.cs.berkeley.edu/	Discrete Optimization (audit) incl several archived classes
(College)Extracurricular:	<i>Several groups incl:</i>	Professional Organizations:
<i>Physics Society</i> officer, (vp/etc) 3yrs	<i>Community Radio Station show, 2 yrs</i>	AAA/ (<i>Association for the Advancement of Artificial Intelligence</i>) <i>life-member.</i>
Meetings: micro-blog:	Code portfolio:	IEEE (Institute of Electrical and Electronics Engineers)& Computer Society 10yrs
meetup.com user:5734460 twitter: @Mbstream	https://github.com/MBcode	http://www.linkedin.com/in/michaelbobak (50 groups)

Experience Summary: Modeling&Simulation and AI work has helped my design and algorithmic skills. Growing up around UIUC, using networked computers ([PLATO](#)) since early grade-school, early tech-groups (sci/eng/CS), then work in & around super-computing, has set my standards for what is a good/ interesting system, quite high. I get something out of all of my work, yet think I can do more. So I continue to look for places that I can enact (at least parts of) my vision. I prefer scientific applications, but the ability to push the norm with innovative applications wins out in any domain. If your IT dept. already has the skills for what you want done, I probably shouldn't work for you. I should be helping you with a multi-disciplined problem, by leveraging my varied background. I am a uniting force as both a knowledge worker&kn-engineer. If it isn't clear, I don't just write code. If you just want code written and no problem solved along the way; then I can only do that short-term.