Michael Bobak

http://mike.bobak.googlepages.com/
http://chicagolisp.googlepages.com/

Seeking creative computational problem-solving post as either a: Knowledge-Engineer, Scientific/Research-Programmer/Systems-Analyst/Architect, Scientist, Multi-disciplined Research/**Software-Engineer.**

Strong desire to further my knowledge/experience with a variety of Artificial Intelligence / modeling&simulation techniques. I look for stimulating peer interaction on challenging projects. Particularly interested in work related to a Knowledge-Based-Modeling&Simulation Environment &/or an Assisted Problem-Solving-Environment.

Knowledge-(Representation/Reasoning/Management) 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-driven)language/environments. Having a Lisp(like)language, use AI techniques, & a science-based 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 (accompanying code written in OPS5/Lisp/C)

Programming Skills

General Languages: [19+ years]   *Object Orientated Languages:* [14+ years]

C (6+ years)   C++ (1+ years)
FORTRAN (6+ years)   Smalltalk (~1 year)
Lisp (3+yrs of CL 10+yrs of others)   Python(< 1year), Java (1+ year)
Scheme (~1 yr)   CLOS [Common-Lisp-Object-System]
CLIPS [C Language Integrated Production System] 4+ yrs   COOL [CLIPS Object Orientated Language] (4+ years)
[CLIPS is based upon ART]   ART-Enterprise (originally by Inference Corp.) (4+ years)   [both~have CLOS]
MUMPS (1/2 year), and various others.

Rule-Based Programming Languages: [10+ years]
OPS5 [Official Production System 5], JESS (1 yr), Prolog, GoldWorks(< 1 yr), CLIPS, Art*Enterprise 4+years

Libraries: SGI's Graphics Language (*Open*GL) (3+ years)
High Performance Computing (HPC) (packages&libs) (3+ years) eg.PVM [Parallel-Virtual-Machine]
Web-Services: using Tomcat/Axis SOAP, jsp; Semantics via Protege-OWL/SWRL/Jess
Database: MS-Jet/SQL, MySQL, PostgreSQL, other commercial via OR-mapping tool.
Operating Systems:
UNIX (18+ years), incl. Linux, OS-X.Darwin (since beta) (6+ years), NeXTSTEP, MS NT/Win2k (6+ years)

College Course work related to Artificial Intelligence (AI):

Pattern Recognition & Machine Learning   Programming Language Principles
Special Topics in Neural Networks   *Mathematical Modeling & Visualization*
Introduction to Artificial Intelligence   *Building Problem Solvers*
Mechanized Mathematical Inference -(1/2 of)   *Human Computer Interaction*(HCI)
Computer Inference & Knowledge Acquisition   *AI-2* http://aima.cs.berkeley.edu/
Computer Models of Cognitive Processes   *Numerical Analysis*
Design of Computer Problem Solvers

College Extracurricular Experience: *Physics Society* officer, (vp/etc) 3 years.
Other groups and volunteering.   *Community Radio Station show, 2 years*

Professional Organizations: AAAI [American Association for Artificial Intelligence]

IEEE [Institute of Electrical and Electronics Engineers]   now Association for the Advancement of Artificial Intelligence
IEEE Computer Society [computer.org]

Work Experience:

2/2001-present   Freelance/Mindbox/etc   Chicago, IL
Knowledge Engineer
Rule-based, Case-based, Machine-learning/Data-Mining, &any Lisp work. Long-term computational-science (bio/chem/physics/bioinformatics), sim/AI background. Applied to a wide variety of problems. Will do the 'smarts' behind web selling, teaching, & many other applications. Research(science/AI/etc)programming, simulation, visualization,... Can take advanced/novel projects from idea to prototype to deployment. Part-time projects are just fine/preferred for maint.
Worked through http://www.mindbox.com 3/02-10/02. [used Art*Enterprise]
See: "http://softdist.mindbox.com/pressreleases/Ocwen Mind Box.doc"
Worked upto ½ time for http://cas.dis.anl.gov 5/03-5/04 [used Java Simulation] &in 06?
Worked full-time 8/03-~05 labs.gte.com, Model-Based-Diagnosis on a national scale.
[Used Art*Enterprise] See: http://hompage.mac.com/IAAI96-SSCFI.pdf
Bioinformatics/control contract 11/04-12/05 [Used 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. Incl. Grant proposal work.
Worked for CME.com 2/06-06/06 (re)organizing trade-data validation code. [using CLIPS/Jess]
Signal-Processing/Machine-Learning (startup) 06/06-[Lisp/etc]   Protege&Lisp
Hospital Informatics/Machine-Learning 02/07-05/07-[Lisp]
Contact me for estimates & reasonably priced prototypes. Available for term/pt. work.

6/1998-2/2001   University of Illinois   Urbana-Champaign, IL
(*Senior*) *Research Programmer* (Knowledge Based Systems Lab)
Organize many levels of a very large knowledge based simulation projects.
Brought over 18 programmers together to deliver a coherent product. Being used in classroom, real life testing, presented atIAAI99 *'Automated Instructor Assistant for Ship Damage Control'*
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.
The system teaches Navy officers how to save a simulated ship in crisis.
A variant was developed to catch real crisis conditions and suggest solutions, in real-time.

10/1996-6/1998   Brightware   Novato, CA
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 (eg. financial: mortgage, web based job finder). All with Art*Enterprise. See: http://www.brightware.com/eservice_solutions/
_More recently I worked 1/2year for the new version of the company: Mindbox.

2/1996-8/1996   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

2/1993-2/1996   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 http://www.dis.anl.gov/DEEM/DIAS
    http://mike.bobak.googlepages.com/bobak/diaswp.pdf http://doogis.dis.anl.gov/paper/index.html
 _More recently I worked part-time for the new subgroup of dis: cas.dis.anl.gov.

1/1990-1/1993   University of Illinois   Urbana-Champaign, 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: http://web.bilkent.edu.tr/ncsa/Apps/CBdir.html

4/1989-12/1989   NCSA,Uof IL,GIST   Urbana-Champaign, IL
Programmer/Consultant *[National Center for Supercomputing Applications]*
Suggested scientific software path for *Software Tools Group* of NCSA; Wrote molecular graphics
code for a professor. Wrote testing code for Global Info Systems Tech. [in C]

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

3/1982-8/1988   Construction Engineering Research Lab   Urbana-Champaign, IL
Research Programmer (Modeling then Acoustics teams)
Provided research support from start to finish.
Wrote and ran computer simulation code, compared output with field data. [FORTRAN]
Did field measurments to back up predictions. (Team/Self; Local/US/World-wide)
My work went into several published papers. Some found at:
http://adsabs.harvard.edu/cgi-bin/nph-bib_query?1987ASAJ...81..638J
http://adsabs.harvard.edu/cgi-bin/nph-bib_query?1987nce..conf..215R
    http://www.cecer.army.mil/td/tips/pub/details.cfm?PUBID=1452&TOP=1
- Early work went into GRASS: http://grass.itc.it/intro/general.php

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.]

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References: Available upon request.