

# Michael Bobak

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## Summary

My *expertise* is in (knowledge-based) Modeling&Simulation and Artificial-Intelligence, with a focus on Scientific applications, coupled with an ability to push the norm by creating innovative applications in any domain. I often help with multi-disciplined problems, by leveraging my varied background. I am a uniting force as both a knowledge-worker & knowledge-engineer. I look forward to stimulating peer interaction on challenging projects (e.g. building an assisted problem-solving/knowledge-managment environment for your domain).

Research-Programmer / Knowledge-Engineer with a ~50/50 research/consumer split in experience.

Seeking position (as a creative computational problem-solver) including:

• Knowledge-Engineer	• Scientific/Research-Programmer	• Systems-Analyst/Architect	• Software-Engineer
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## University of Illinois Urbana-Champaign

<b>M.S. Biophysics &amp; Computational Biology, (with focus in AI)</b>	October 1993 Thesis: <i>Molecular Simulation with Expert Rules</i> (in OPS5/Lisp/C)
B.S. Physics and B.S. Biophysics	May 1988 dept-distinction; <i>Physics Society</i> officer, 3 years

## Artificial Intelligence (AI) coursework

Pattern Recognition & Machine Learning	Introduction to Artificial Intelligence
Special Topics in Neural Networks	AI-2 <a href="http://aima.cs.berkeley.edu/">http://aima.cs.berkeley.edu/</a>
Computer Models of Cognitive Processes	Computer Inference & Knowledge Acquisition
Mechanized Mathematical Inference <i>-(1/2)</i>	Design of Computer Problem Solvers
<i>Building Problem Solvers</i>	<i>HCI, MathModeling&amp;Viz, etc.</i>

## Languages <sup>19+years</sup>

<b>Rule-Based</b>	10+ years	CLIPS, Art*Enterprise (4+years), JESS(1 yr), GoldWorks(< 1 yr), OPS5[OfficialProductionSystem 5], KM(3yrs), Prolog, etc
<b>Object-Orientated</b>	14+	CLOS [Common-Lisp-Objet-System], COOL [CLIPS ObjOrientLang], Smalltalk (~1 year), Java (1+yr), C++ (1+ years), Python
<b>Other</b>		Lisp (5+years of CL 10+years of others), C (6+ years), FORTRAN (6+ years), Scheme (~1 year), MUMPS (1/2 year), etc.
<b>Prefer</b>		Dynamic(event-driven)language/environments, lisp-like RuleBased(shells), flexible KnowledgeRepresentation&Reasoning.

<b>Viz/HPC/Cloud</b>	SGI's Graphics Language ( <i>OpenGL</i> ) (3+ years), PVM [Parallel-Virtual-Machine ] (1+year), Hadoop (<1year)
<b>Web-Services</b>	Tomcat/Axis SOAP, REST, w/json; Semantics via Protege-OWL/SWRL/Jess
<b>Databases</b>	MS-Jet/SQL, MySQL, PostgreSQL, ORDB-links and persistent-stores, incl. Graph/Triple-stores.
<b>OperatingSystems</b>	UNIX (18+ years), incl. Linux, OS-X Darwin (10+ years), NeXTSTEP, MS(NT/Win2k/XP) (8+ years)
<b>Focus</b>	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.

## Professional Organizations:

- [AAAI](#) (Association for the Advancement of Artificial Intelligence) *life-member*
- [IEEE](#) (Institute of Electrical and Electronics Engineers) & Computer Society 10years
- <http://www.linkedin.com/in/michaelbobak> *50-groups*

## Chronology:

Architect Adaptive-Learning-Platform [ApolloGroup](#) San-Francisco CA 10/2010-present

Programmer/Analyst III University of California San-Francisco 9/2007-10/2010

- *Medical-Informatics research (relating to clinical-trials) in Lisp,*
- *including Natural-Language-Processing and conceptual-annotation for search*
- *development of [two](#) related ontologies*
- [http://bmir.stanford.edu/publications/view.php/a\\_practical\\_method\\_for\\_transforming\\_free\\_text\\_eligibility\\_criteria\\_into\\_computable\\_criteria](http://bmir.stanford.edu/publications/view.php/a_practical_method_for_transforming_free_text_eligibility_criteria_into_computable_criteria)
- <http://rctbank.ucsf.edu/home/mb.htm>

- Knowledge Engineer consultant out of Chicago, IL* 2/2001-9/2007
- <http://www.mindbox.com/NewsEvents/PressReleases/21OCT2002.pdf> [Art\*Enterprise] 3/02-10/02
  - <http://cas.dis.anl.gov> upto 50% 5/03-5/04 [used Java Agent-based Simulation] <http://repastr.sourceforge.net/>
  - [labs.gte.com](http://labs.gte.com), National Model-Based-Diagnosis Art] <http://mike.bobak.googlepages.com/IAA196-SSCFI.pdf> 8/03-05
  - [ibl.gov](http://ibl.gov) [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. 11/04-12/05
  - 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 [ghx.com](http://ghx.com) 02/07-05/07-[Lisp],
  - MachineLearning speedup for financial-scientific [Lisp]
- (Senior) Research Programmer (Kn-Based Systems Lab) Univ-IL@Urbana-Champaign* 6/1998-2/2001
- 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, to Navy officers how to save a simulated ship in crisis.
  - IAA199 'Automated Instructor Assistant for Ship Damage Control' <http://www.aaai.org/Papers/IAAI/1999/IAAI99-110.pdf>
  - A variant was developed to catch real crisis conditions and suggest solutions, in real-time.
  - <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).
  - All with Art\*Enterprise. See: [http://www.brightware.com/eservice\\_solutions/](http://www.brightware.com/eservice_solutions/)
  - More recently I worked 1/2year for the new version of the company: Mindbox.
- Lead Programmer/Analyst Institute of Learning Sciences Evanston, IL* 2/1996-8/1996
- 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.html>
- Software Engineer (EAD then DIS groups) Argonne National Lab Argonne, IL* 2/1993-2/1996
- Prototyped communication & control of distributed simulation. [in CLIPS PVM etc] Agent wrapping of simulations with CLIPS+PVM, to describe then mix and match them. Other work as needed. Algo/Viz/Etc. Written up in a book about innovative distributed object application.
  - See: [http://www.dis.anl.gov/DEEM/DIAS\\_diaswp.pdf](http://www.dis.anl.gov/DEEM/DIAS_diaswp.pdf) Also used C++/Smalltalk/FORTRAN with PVM
  - After part-time for DIS again through <http://cas.dis.anl.gov>
  - Wrote fielded Expert System by myself at the end of grad-school, for the EPA, (EAD). [in Lisp rule-shell then CLIPS]
- Graduate Research Assistant /Research Programmer Univ-IL@Urbana-Champaign* 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&head of Biophysics <http://web.bilkent.edu.tr/ncsa/Apps/CBdir.html>
- Programmer/Consultant NCSA,Uof IL,GIST Urbana-Champaign, IL* 4/1989-12/1989
- Suggested scientific software path for *Software Tools Group* [National Center for Supercomputing Applications]
  - Wrote molecular viz code for a professor.
  - Wrote testing code for Global Info Systems Tech. [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 and Maths-package]
- Research Programmer Construction Engineering Research Lab Urbana-Champaign, IL* 3/1982-8/1988
- (Modeling then Acoustics teams) Started with GIS work, then moved to Physical-Modeling
  - Provided research support from start to finish.
  - Wrote and ran computer simulation code, compared output with field data. [FORTRAN]
  - Did field measurements to back up predictions. (Team/Self; Local/US/World-wide)
  - [http://adsabs.harvard.edu/cgi-bin/nph-bib\\_query?1987ASAJ...81..638J](http://adsabs.harvard.edu/cgi-bin/nph-bib_query?1987ASAJ...81..638J) & hep with others.
  - Early work went into GRASS: <http://grass.itc.it/intro/general.php>