

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 [Knowledge-Based](#) aids, for process improvement to [teaching](#). AI: [Knowledge-Representation&Reasoning](#), [Rules](#), [Kn-Acq](#), [NLP](#), [ML](#), ...

WORK EXPERIENCE

Present Nov 2019	National Center for Supercomputing Applications <i>Urbana, IL</i> Sr Research Software Engineer Bringing my background to earthcube.org and other grants. Focus on semantics/metadata search, with some NLP and sim. [py/..]
Aug 2019 Aug 2018	Agribile/Nutrien <i>Urbana, IL</i> Sr Engineer, Natural Systems Ag-informatics/sim/.. Planned and guided reworking the main simulation, documentation and ML/verification [Python]
Present Jun 2018	AlohaHealth <i>remote</i> Sr Knowledge-Engineer Advising early stage startup built on the topic of my ucsf research. Semantic search for clinical trials. [graph store/s]
Jul 2018 Jul 2011	Freelance <i>San-Francisco, CA</i> consultant <ul style="list-style-type: none">- Working as an ontologist for osthus.com on aligning bio/pharma ontologies to BFO to annotate masses of data in HDF5 files, for the allotrope.org- Worked with IDEO on their systems integration issues that could be aided by Knowledge-Graph for information refinement and cleanup- Worked with the Siemens Web of Things research group on use of SemWeb+IoT for adaptable manufacturing- Advised with a variety of start-ups in understanding AI tech, including:<ul style="list-style-type: none">- Fashion start-up that would track unstructured blog info to surface trends- Sports startup thewhytehousegroup.com needed dbpedia search ability- Chatbot in work context- Developed ideas to take my UCSF research and fuse it with the Patient Data Mining Cluster that was developed by the UCSF Head of Research Computing and a PhD student, which has now been submitted for a patent- Worked with UCSF in Psychology Department understand how to apply NLP and graph relation insights into an app they developed called Prime, to help with mental health management- Continued to build skills around ML, Semantic-Web/Linked-Data, and Knowledge-Engineering, with these courses, from:<ul style="list-style-type: none">- Coursera: Data Analysis, Data Science (with distinction), Machine Learning (with distinction), Discrete Optimization (audit)- openHPI: Semantic Web, Knowledge Engineering, Kn Eng w/Semantic Web technology, LinkedDataEngineering- Stanford: Design Thinking
Jul 2011 Oct 2010	ApolloGrp.edu <i>San-Francisco, CA</i> Architect , Adaptive Learning Platform Conceptually annotate study material & tests for automated remediation, instrument classroom to learn from use [Hadoop, Lisp, KM]
Oct 2010 Sep 2007	UCSF.edu <i>San-Francisco, CA</i> 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 <i>Chicago/Boston</i>

Feb 2001	<div>Knowledge-Engineer/ Research-Programmer</div> <p>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(verizonlabs.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]</p>
Feb 2001	kbs.ai.UIUC.edu <i>Urbana, IL</i>
Jun 1998	<div>(Senior) Research Programmer (Knowledge Based Systems Lab)</div> <p>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</p>
Jun 1998	Brightware <i>out of Chicago, IL</i>
Oct 1996	<div>Knowledge-Engineer</div> <p>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.</p>
Aug 1996	Institute of Learning Sciences <i>Evanston, IL</i>
Feb 1996	<div>Lead Programmer/Analyst</div> <p>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</p>
Feb 1996	Argonne National Lab <i>Argonne, IL</i>
Feb 1993	<div>Software Engineer (EAD then DIS groups)</div> <p>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.</p>
Jan 1993	UIUC.edu <i>Urbana, IL</i>
Jan 1990	<div>Graduate Research Assistant /Research Programmer</div> <p>Wrote molecular graphics package used in classes & for publications. [in C] Used machine-learning techniques for protein structure prediction.</p> <p>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</p>
Dec 1989	[National Center for Supercomputing Applications]NCSA,Uof IL,GIST <i>Urbana/Savoy, IL</i>
Apr 1989	<div>Programmer/Consultant</div> <p>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]</p>
Apr 1989	Shearson Lehman Hutton <i>London, England</i>
Oct 1988	<div>Programmer (Research Computing)</div> <p>Maintained financial databases & daily report information. Organized worldwide mailing system. Wrote statistics code for stock</p>

predictions. [MUMPS and Maths-package]

Aug 1988 **US Army Corp. of Eng. Research Lab** Champaign, IL
Mar 1982 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.osgeo.org

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 and [linkedin-groups](#)

SKILLS & EXPERTISE

AI [Artificial Intelligence](#) [Adaptive Systems](#) [Business Rules](#) [Recommender-Systems](#) [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](#)

PROGRAMMING LANGUAGES/....:

<u>19+ years overall</u>	<u>Object Orientated</u>	<u>Rule-Based KnRep& Reasoning:</u>	<u>Libs:</u>	<u>Databases:</u>	<u>Operating-Systems:</u>
	[14+ years]	[10+ years]:			
C(6+ years)	Smalltalk (~1 yr) C++	OPS5 , Prolog ,	Viz: OpenGL (3+ yrs)	MS-Jet/SQL, MySQL	NeXTSTEP, MS(NT..XP) (8+ yrs)
FORTRAN(6+ yrs)	(1+yr)	GoldWorks (<1yr)			
Scheme (~1 yr) MUMPS (1/2yr)..	Python(5+yrs), Java/Scala (1+ yr)	CLIPS (4+yrs), ART (4+yrs)	HPC: PVM (1+yr)	PostgreSQL, ORDB	UNIX (18+ years), incl. GNULinux
Lisp (7+yrs of CL 10+yrs of others)	CLOS [CL -Object-System]	Knowledge-Machine (3+years), JESS (1 yr), Protege (6+yrs)	WS: Tomcat/Axis SOAP/REST	Graph&triple persistence &other NoSQL	OS-X .Darwin(10+ years)
github opensource examples at github.com/MBcode					
as html/ pdf and latest-talk					