

Michael Bobak

Knowledge-Engineer / Research-Programmer

mike.bobak@gmail.com

mike.bobak.googlepages.com | [linkedin.com/in/michaelbobak](https://www.linkedin.com/in/michaelbobak)

Champaign, IL

Tweets: [@MBstream](https://twitter.com/MBstream)

SUMMARY

[Research-Programmer](#) starting with (bio)[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 and Reasoning](#), [Rules](#), [Kn-Acq](#), [NLP](#), [ML](#), ...

WORK EXPERIENCE

Present	National Center for Supercomputing Applications <i>Urbana, IL</i>
Nov 2019	Sr Research Software Engineer
	Bringing my background to earthcube.org and other grants as need be. Focus on semantics/metadata search, with some NLP and sim.
Aug 2019	Agribile/Nutrien <i>Urbana, IL</i>
Aug 2018	Sr Engineer, Natural Systems
	Ag-informatics/sim/.. Planned and guided reworking the main simulation, documentation and ML/verification
Present	AlohaHealth <i>Urbana, IL</i>
Jun 2018	Sr Knowledge-Engineer
	Advising early stage startup built on the topic of my ucsf research. Semantic search for clinical trials.
Jul 2018	Freelance <i>San-Francisco, CA</i>
Jul 2011	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, which has been designed for schizophrenic young adults, with application to depression management as well- Continued to build skills around ML, Semantic-Web/Linked-Data, and Knowledge-Engineering:<ul style="list-style-type: none">- Coursera courses: Data Analysis, Data Science (with distinction), Machine Learning (with distinction), Discrete Optimization (audit)- openHPI courses: Semantic Web, Knowledge Engineering, Kn Eng w/Semantic Web technology, LinkedDataEng- Stanford courses: Design Thinking
Jul 2011	ApolloGrp.edu <i>San-Francisco, CA</i>
Oct 2010	Architect , Adaptive Learning Platform
	Conceptually annotate study material & tests for automated remediation, instrument classroom to learn from use [Hadoop, Lisp, KM]
Oct 2010	UCSF.edu <i>San-Francisco, CA</i>
Sep 2007	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** *Chicago/Boston*

Feb 2001 Knowledge-Engineer/ Research-Programmer

[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([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]

Feb 2001 **kbs.ai.UIUC.edu** *Urbana, IL*

Jun 1998 (Senior) Research Programmer ([Knowledge Based Systems Lab](#))

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](#)

Jun 1998 **Brightware** *out of Chicago, IL*

Oct 1996 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 (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.

Aug 1996 **Institute of Learning Sciences** *Evanston, IL*

Feb 1996 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](#)

Feb 1996 **Argonne National Lab** *Argonne, IL*

Feb 1993 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_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](#).

Jan 1993 **UIUC.edu** *Urbana, IL*

Jan 1990 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: [web.bilkent.edu.tr/ncsa/Apps/CBdir.html](#)

Dec 1989 **[National Center for Supercomputing Applications]NCSA,Uof IL,GIST** *Urbana/Savoy, IL*

Apr 1989 Programmer/Consultant

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]

Apr 1989

Oct 1988

Programmer (Research Computing)

Maintained financial databases & daily report information. Organized worldwide mailing system. Wrote statistics code for stock predictions. [MUMPS and Maths-package]

Aug 1988

Mar 1982

US Army Corp. of Eng. Research Lab

Champaign, IL

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.fbk.eu

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](#)[Case-Based Reasoning](#)[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/....:

19+ years overall

Object Orientated

Rule-Based KnRep& Reasoning:

Libs:

Databases:

Operating-Systems:

[14+ years]

[10+ years]:

C(6+ years)

Smalltalk (~1 yr)

OPS5, Prolog,

Viz: OpenGL(3+ yrs)

MS-Jet/SQL, MySQL

NeXTSTEP, MS(NT..XP) (8+ yrs)

FORTTRAN(6+ yrs)

(1+yr)

GoldWorks(<1yr)

UNIX (18+ years),

Scheme (~1 yr)

MUMPS (1/2yr)..

CLIPS(4+yrs),ART(4+years)

HPC: PVM (1+yr)

PostgreSQL, ORDB

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

as a pdf

and

latest-talk

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