

# Michael Bobak

Knowledge-Engineer / Research-Programmer

[mike.bobak@gmail.com](mailto:mike.bobak@gmail.com)

[linkedin.com/in/michaelbobak](https://linkedin.com/in/michaelbobak)

Champaign, IL

Tweets: [@MBstream](#)

## 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	<b>National Center for Supercomputing Applications</b> <i>Urbana, IL</i> <a href="#">Sr Research Software Engineer</a> Bringing my background to <a href="#">earthcube.org</a> and other grants. Focus on semantics/metadata search, with some NLP and sim. [py/..]
Aug 2019 Aug 2018	<b>Agribile/Nutrien</b> <i>Urbana, IL</i> <a href="#">Sr Engineer, Natural Systems</a> Ag-informatics/sim/.. Planned and guided reworking the main simulation, documentation and ML/verification [Python]
Present Jun 2018	<b>AlohaHealth</b> <i>remote</i> <a href="#">Sr Knowledge-Engineer</a> Advising early stage startup built on the topic of my ucsf research. Semantic search for clinical trials. [graph store/s]
Jul 2018 Jul 2011	<b>Freelance</b> <i>San-Francisco, CA</i> <a href="#">consultant</a> <ul style="list-style-type: none"><li>- Working as an ontologist for osthus.com on aligning bio/pharma ontologies to BFO to annotate masses of data in HDF5 files, for the <a href="#">allotrope.org</a></li><li>- Worked with IDEO on their systems integration issues that could be aided by Knowledge-Graph for information refinement and cleanup</li><li>- Worked with the Siemens Web of Things research group on use of SemWeb+IoT for adaptable manufacturing</li><li>- Advised start-ups in AI: fashion blog to trends, sport dbpedia info, work chatbot</li><li>- 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</li><li>- 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</li><li>- Continued to build skills around ML, Semantic-Web/Linked-Data, and Knowledge-Engineering, with these courses, from:<ul style="list-style-type: none"><li>- Coursera: Data Analysis, Data Science (with distinction), Machine Learning (with distinction), Discrete Optimization (audit)</li><li>- openHPI: Semantic Web, Knowledge Engineering, Kn Eng w/Semantic Web technology, LinkedDataEngineering</li><li>- Stanford: Design Thinking</li></ul></li></ul>
Jul 2011 Oct 2010	<b>ApolloGrp.edu</b> <i>San-Francisco, CA</i> Architect , <a href="#">Adaptive Learning Platform</a> Conceptually annotate study material & tests for automated remediation, instrument classroom to learn from use [Hadoop, Lisp, KM]
Oct 2010 Sep 2007	<b>UCSF.edu</b> <i>San-Francisco, CA</i> <a href="#">Programmar/Analyst III</a> Medical-Informatics <a href="#">research</a> (relating to clinical-trails) in Lisp/KM, and Natural-Language-Processing in Java/etc; <a href="#">paper</a> with Stanford <a href="#">group</a> ; <a href="#">ontology</a> dev/use [Lisp, KM, ..]
Sep 2007 Feb 2001	<b>Freelance</b> <i>Chicago/Boston</i> <a href="#">Knowledge-Engineer/ Research-Programmer</a> <a href="#">mindbox.com</a> 3/02-10/02. [used Art*Enterprise] See: <a href="#">Ocwen_Mindbox</a> Worked up to half-time for <a href="#">cas</a> .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  
Jun 1998

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

(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  
Oct 1996

**Brightware** *out of Chicago, IL*

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/](http://www.brightware.com/eservice_solutions/) More recently I worked 1/2year for the new version of the company: Mindbox.

Aug 1996  
Feb 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>

Feb 1996  
Feb 1993

**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\\_HLAsim](http://www.dis.anl.gov/DEEM_HLAsim) [http://www.dis.anl.gov/DEEM/DIAS\\_mike.bobak.googlepages.com/diaswp.pdf](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  
Jan 1990

**UIUC.edu** *Urbana, 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: [web.bilkent.edu.tr/ncsa/Apps/CBdir.html](#)

Dec 1989  
Apr 1989

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

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

**Shearson Lehman Hutton** *London, England*

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.osgeo.org](http://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](#) 10yr

**Other groups:**  
[meetup.com](#), [linkedin-groups](#)

**ID**  
[orcid.org/0000-0003-2357-5918](http://orcid.org/0000-0003-2357-5918)  
[wikidata.org/wiki/Q104512704](http://wikidata.org/wiki/Q104512704)

**Papers**  
[scholar.google.com/&q=michael+bobak](https://scholar.google.com/&q=michael+bobak)

**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/....:**

19+ years overall

Object Orientated  
14+yr

C(6+yr) FORTRAN(6+yr) [Smalltalk](#)(1yr),C++(1+yr)  
Scheme(~1 yr) MUMPS(1/2yr).. Python(5+yr),  
Java/Scala(1+yr)

[Lisp](#) (7+yr [CommonLisp](#) [CLOS](#)[[CL](#) -Object-System]  
10+yr others)

Rule-Based KnRep& Reasoning:10+yr

[OPSS](#), [Prolog](#),[GoldWorks](#)(1yr)  
[CLIPS](#)(4+yr),[ART](#)(4+yr),

[Knowledge-Machine](#)(3+yr),  
[JESS](#)(1 yr),[Protege](#)(6+yr)

Libs:

Viz: [OpenGL](#)(3+yr)  
[HPC:](#) [PVM](#) (1+yr)

[WS](#):Tomcat/Axis SOAP/REST

Databases:

MS-Jet/SQL, MySQL NeXTSTEP, MS(NT..XP) (8+yr)  
PostgreSQL, [ORDB](#) UNIX (18+yr),[GNU/Linux](#)

[Graph&triple](#)  
[persistance](#)  
&other [NoSQL](#)

Operating-Systems:

[OS-X](#).Darwin(10+yr)

[some opensource examples at: github.com/MBcode](#) [.github.io](#)

as [html](#)/ [pdf](#) and [latest-talk](#) . .