# Michael Bobak

## Knowledge-Engineer / Research-Programmer

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* San Francisco, California
* [@MBstream](https://twitter.com/MBstream)

# Summary

[Research-Programmer](http://dirkgorissen.com/2012/03/26/the-researcher-programmer-a-new-species/) starting with [physical-science](#education) simulation, adding AI study and years of [Knowledge-Engineering](http://en.wikipedia.org/wiki/Knowledge_engineering) work as well ([edu](http://www.casc.org/)/[gov](http://anl.gov/)/[com](#experience)).

Focus on [Knowledge-Based](http://en.wikipedia.org/wiki/Knowledge-based_systems) aids, for process improvement to [teaching](http://en.wikipedia.org/wiki/Intelligent_tutoring_system). [AI](http://en.wikipedia.org/wiki/Artificial_intelligence): [Knowledge-Representation and Reasoning](http://en.wikipedia.org/wiki/Knowledge_representation_and_reasoning), [Rules](http://en.wikipedia.org/wiki/Rule-based_system), [Kn-Acq](http://en.wikipedia.org/wiki/Knowledge_acquisition), [NLP](http://en.wikipedia.org/wiki/Natural_language_processing), [ML](http://en.wikipedia.org/wiki/Machine_learning), ...

# Skills & Expertise

AI

[Artificial Intelligence](http://www.linkedin.com/skills/skill/Artificial_Intelligence?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof)  [Adaptive Systems](http://www.linkedin.com/skills/skill/Adaptive_Systems?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof)  [Business Rules](http://www.linkedin.com/skills/skill/Business_Rules?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof)  [Case-Based Reasoning](http://www.linkedin.com/skills/skill/Case-Based_Reasoning?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof)  [Conceptual Modeling](http://www.linkedin.com/skills/skill/Conceptual_Modeling?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof)  [Data Mining](http://www.linkedin.com/skills/skill/Data_Mining?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof)  [Intelligent Agents](http://www.linkedin.com/skills/skill/Intelligent_Agents?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof)  [Intelligent Systems](http://www.linkedin.com/skills/skill/Intelligent_Systems?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof)  [Knowledge Engineering](http://www.linkedin.com/skills/skill/Knowledge_Engineering?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof)  [Knowledge-based Systems](http://www.linkedin.com/skills/skill/Knowledge-based_Systems?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof)  [Machine Learning](http://www.linkedin.com/skills/skill/Machine_Learning?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof)  [Natural Language Processing](http://www.linkedin.com/skills/skill/Natural_Language_Processing?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof)  [Natural Language Understanding](http://www.linkedin.com/skills/skill/Natural_Language_Understanding?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof)  [Ontology Engineering](http://www.linkedin.com/skills/skill/Ontology_Engineering?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof)  [Rules](http://www.linkedin.com/skills/skill/Rules?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof)  [Semantic Web](http://www.linkedin.com/skills/skill/Semantic_Web?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof)  [Semantics](http://www.linkedin.com/skills/skill/Semantics?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof)  [Causal Inference](http://www.linkedin.com/skills/skill/Causal_Inference?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof)  [Composite Applications](http://www.linkedin.com/skills/skill/Composite_Applications?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof)  [Computational Intelligence](http://www.linkedin.com/skills/skill/Computational_Intelligence?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof)  [Controlled Vocabularies](http://www.linkedin.com/skills/skill/Controlled_Vocabularies?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof)  [Data Analysis](http://www.linkedin.com/skills/skill/Data_Analysis?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof)  [Decision Modeling](http://www.linkedin.com/skills/skill/Decision_Modeling?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof)  [Expert Systems](http://www.linkedin.com/skills/skill/Expert_Systems?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof)  [Information Access](http://www.linkedin.com/skills/skill/Information_Access?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof)  [Information Extraction](http://www.linkedin.com/skills/skill/Information_Extraction?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof)  [Information Retrieval](http://www.linkedin.com/skills/skill/Information_Retrieval?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof)  [Intelligent Tutoring Systems](http://www.linkedin.com/skills/skill/Intelligent_Tutoring_Systems?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof)  [Knowledge Representation](http://www.linkedin.com/skills/skill/Knowledge_Representation?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof)  [Logic Programming](http://www.linkedin.com/skills/skill/Logic_Programming?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof)  [Mathematical Logic](http://www.linkedin.com/skills/skill/Mathematical_Logic?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof)  [Mathematical Programming](http://www.linkedin.com/skills/skill/Mathematical_Programming?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof)  [Ontology Development](http://www.linkedin.com/skills/skill/Ontology_Development?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof)  [Rules Engines](http://www.linkedin.com/skills/skill/Rules_Engines?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof)  [SNOMED](http://www.linkedin.com/skills/skill/SNOMED?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof)  [Semantic Search](http://www.linkedin.com/skills/skill/Semantic_Search?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof)  [Semantic Technologies](http://www.linkedin.com/skills/skill/Semantic_Technologies?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof)  [Taxonomy Development](http://www.linkedin.com/skills/skill/Taxonomy_Development?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof)  [Text Classification](http://www.linkedin.com/skills/skill/Text_Classification?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof)

Science

[Research](http://www.linkedin.com/skills/skill/Research?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof)  [Scientific Software](http://www.linkedin.com/skills/skill/Scientific_Software?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof)  [Scientific Computing](http://www.linkedin.com/skills/skill/Scientific_Computing?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof)  [Simulation](http://www.linkedin.com/skills/skill/Simulation?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof)  [Computational Mathematics](http://www.linkedin.com/skills/skill/Computational_Mathematics?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof)  [Biophysics](http://www.linkedin.com/skills/skill/Biophysics?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof) [Computational Biology](http://www.linkedin.com/skills/skill/Computational_Biology?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof)

Others

[Cloud Computing](http://www.linkedin.com/skills/skill/Cloud_Computing?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof)  [MapReduce](http://www.linkedin.com/skills/skill/MapReduce?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof)  [Hadoop](http://www.linkedin.com/skills/skill/Hadoop?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof)  [Dynamic Languages](http://www.linkedin.com/skills/skill/Dynamic_Languages?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof)  [Exploratory\_programming](http://en.wikipedia.org/wiki/Exploratory_programming) [Common Lisp](http://www.linkedin.com/skills/skill/Common_Lisp?goback=.npe_*1_*1_*1_*1_*1_*1_*1_*1.npe_*1_en*4US_*1_*1_*1_*1_*1_*1&trk=skills-ext-prof)

 [other Languages](#Programming_Languages)

# Work Experience

# [Freelance](http://mike.bobak.googlepages.com/) San-Francisco, CA

## consultant

July 2011 Present

Develop startup idea/s, starting with working on a ProofOfConcept for Patient DataMiningCluster patent application that I helped start at ucsf.edu

# [ApolloGrp.edu](http://ApolloGrp.edu/) San-Francisco, CA

## Architect , Adaptive Learning Platform

Oct 2010 May 2011

Conceptually annotate study material & tests for automated remediation, instrument classroom to learn from use [Hadoop, Lisp, KM]

# [UCSF.edu](http://ucsf.edu/) San-Francisco, CA

## Programmar/Analyst III

Sep 2007 Oct 2010

Medical-Informatics [research](http://rctbank.ucsf.edu/) (relating to clinical-trails) in Lisp/KM, and Natural-Language-Processing in Java/etc; [paper](http://bmir.stanford.edu/publications/view.php/a_practical_method_for_transforming_free_text_eligibility_criteria_into_computable_criteria) with Stanford [group](http://www.bioontology.org/); [ontology](http://rctbank.ucsf.edu/home/ergo) dev/use [Lisp, KM, ..]

# [Freelance](http://mike.bobak.googlepages.com/) Chicago/Boston

## Knowledge-Engineer/ Research-Programmer

Feb 2001 Sep 2007

[mindbox.com](http://mindbox.com/) 3/02-10/02. [used Art\*Enterprise] See: [Ocwen\_Mindbox](http://www.mindbox.com/NewsEvents/PressReleases/21OCT2002.pdf) Worked up to half-time for http://cas.dis.anl.gov 5/03-5/04 [Java Simulation] Worked full-time 8/03-~05([verizon](http://liveweb.archive.org/http%3A//www22.verizon.com/technologytesting/images/sitlablocations_2010_907.jpg))[labs](http://web.archive.org/web/200102032350/http%3A//info.gte.com/).[gte](http://en.wikipedia.org/wiki/GTE).com, Model-Based-Diagnosis on a national scale. [Art \*Enterprise] See: [aaai.org/Papers/IAAI/1996/IAAI96-287.pdf](http://www.aaai.org/Papers/IAAI/1996/IAAI96-287.pdf) Bioinformatics/control [contract](http://escholarship.org/uc/item/9sx790dw) 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]

# [kbs.ai.UIUC.edu](http://web.archive.org/web/19991004063539/http%3A//www-kbs.ai.uiuc.edu/home-main.htm%20%20%20%20%20%20%20%20%20) Urbana, IL

## (Senior) Research Programmer ([Knowledge Based Systems Lab](http://mike.bobak.googlepages.com/mike_bobak_html_m2ca3f470.png))

Jun 1998 Feb 2001

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 http://www.dwilkins.org/members.htm

# [Brightware](http://web.archive.org/web/200101182329/http%3A//www.brightware.com/) out of Chicago, IL

## Knowledge-Engineer

Oct 1996 Jun 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). [Art\*Enterprise]See: [http://www.brightware.com/eservice\_solutions/](http://web.archive.org/web/20031203203326/http%3A//www.brightware.com/eservice_solutions/) More recently I worked 1/2year for the new version of the company: Mindbox.

# [Institute of Learning Sciences](http://web.archive.org/web/20010419070659/http%3A//www.ils.nwu.edu/) Evanston, IL

## Lead Programmer/Analyst

Feb 1996 Aug 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.htm](http://web.archive.org/web/20070204072524/http%3A//www.qrg.northwestern.edu/projects/NSF/Cyclepad/aboutcp.htm)

# [Argonne National Lab](http://www.dis.anl.gov/) Argonne, IL

## Software Engineer ([EAD](http://www.evs.anl.gov/) then [DIS](http://www.dis.anl.gov/) groups)

Feb 1993 Feb 1996

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://web.archive.org/web/20050911000443/http%3A//www.dis.anl.gov/DEEM/) [HLAsim](http://en.wikipedia.org/wiki/High-level_architecture_%28simulation%29) [http://www.dis.anl.gov/DEEM/DIAS](http://web.archive.org/web/20050219064147/http%3A//www.dis.anl.gov/DEEM/DIAS/) [mike.bobak.googlepages.com/diaswp.pdf](http://mike.bobak.googlepages.com/diaswp.pdf) \_More recently I worked part-time for the new subgroup of dis: [cas.dis.anl.gov](http://web.archive.org/web/20040404121954/http%3A//www.dis.anl.gov/msv/msv_cas.html).

# [UIUC.edu](http://uiuc.edu/) Urbana, IL

## Graduate Research Assistant /Research Programmer

Jan 1990 Jan 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 and head of Biophysics at the time. see: [web.bilkent.edu.tr/ncsa/Apps/CBdir.html](http://web.archive.org/web/20081012110053/http%3A//web.bilkent.edu.tr/ncsa/Apps/CBdir.html)

# [[National Center for Supercomputing Applications]NCSA,Uof IL](http://ncsa.uiuc.edu/),[GIST](http://inknowvation.com/node/2633) Urbana/Savoy, IL

## Programmer/Consultant

Apr 1989 Dec 1989

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]

# [Shearson Lehman Hutton](http://en.wikipedia.org/wiki/Lehman_Brothers%22%20%5Cl%20%22Merger_with_American_Express_.281984.E2.80.931994.29)

 London, England