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 as well (in: edu/gov/com). Focus on Knowledge-Based aids, for process improvement to teaching. AI: Ontology, Knowledge-Representation and Reasoning, Rules, Kn-Acq, NLP, ML

Work Experience

Ontology Data Developer/Analyst (Integrations) **xendat.com/vrtx.com**

Contract to a pharma's Ontology Group [Python, Triple-Stores, (web)Protege, Semantic-Web-Libs]

National Center for Supercomputing Applications, Sr Research Software Engineer, *Urbana, IL* 2019-2023

Bringing my background to earthcube.org and other grants. Focus on semantics/metadata search, with some NLP and sim.

AlohaHealthNet **Sr Knowledge-Engineering** 2017-2025 (remote)

Advising early stage startup built on the topic of my UCSF.edu research.

Agrible/Nutrien **Sr Software Engineer** 2017-18 (Champaign Il)

Planned & guided reworking the main simulation, documentation, & ML/verification

Freelance Consultant, July 2011-2017, San Francisco, CA

- Working as an otologist 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: 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
- Help with an assisted eco-sim/modeling environment in Lisp.

Continued to build skills around ML, Semantic-Web/Linked-Data, and Knowledge-Engineering:

- Coursera courses: Data Analysis, Data Science (with distinction), Machine Learning (with distinction), Discrete Optimization (audit) – open-HPI courses: Semantic Web, Knowledge Engineering, Knowledge-Engineering with Semantic Web technology, Linked-Data-Engineering - Stanford courses: Design Thinking

Apollo Education Group, Architect, Adaptive Learning Platform, Oct 2010 - Jul 2011, San Francisco, CA

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

UCSF Programmer/Analyst III, Sept 2007-Oct 2010, San Francisco, CA

Medical-Informatics research (relating to clinical-trails) in Lisp/KM, and Natural Language Processing in Java; paper with Stanford group; ontology dev/use [Lisp, KM, ..]

Freelance Knowledge Engineer/ Research-Programmer, Feb 2001 Sept 2007, Chicago and Boston

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], Machine Learning speedup for financial-scientific [Lisp]

UIUC Knowledge Based Systems Lab, (Senior) Research Programmer, Jun 1998-Feb 2001, Urbana, IL

Organize many levels of a very large knowledge-based simulation projects. Brought over 18 programmers together to deliver a coherent product. Ran weekly 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

Brightware, Knowledge Engineer, Oct 1996-Jun 1998, Chicago, IL

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 (i.e. financial: mortgage, web based job finder). [Art*Enterprise] See: www.brightware.com/eservice_solutions &later 1/2 year for the new version of the company: Mindbox.

Institute of Learning Sciences, Lead Programmer/Analyst, Feb 1996-Aug 1996, Evanston, IL

Wrote Lisp code (mainly GUI) for Qualitative Research Group. Learned more about Qualitative/Quantitative Simulation, Model-Based Reasoning, Intelligent-Tutoring-Systems, and general Lisp programming. See: www.qrg.northwestern.edu/projects/NSF/Cyclepad/aboutcp.htm

Argonne National Lab (EAD and DIS groups), Software Engineer, Feb 1993-Feb 1996, Argonne, IL

Wrote fielded Expert System by myself at the end of grad-school. [in Lisp rule-shell then CLIPS] Prototyped communication and 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: www.dis.anl.gov/DEEM HLAsim www.dis.anl.gov/DEEM/DIAS diaswp.pdf Later some work for new subgroup of dis: cas.dis.anl.gov.

Education

University of Illinois, Urbana-Champaign
MS Biophysics & Comp-Biology with AI, 1990-93 **Research Assistant /Research Programmer**
BS Physics, BS Biophysics, 1983-88, dept. distinction **Research Programmer**(1/2 time w/local lab)

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 wikidata.org/wiki/Q104512704
Papers scholar.google.com/&q=michael+bobak