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 (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
Nov 2019

National Center for Supercomputing Applications *Urbana, IL*

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

Agrible/Nutrien *Urbana, IL*

Sr Engineer, Natural Systems

Ag-informatics/sim/.. Planned and guided reworking the main simulation, documentation and ML/verification [Python]

Present
Jun 2018

AlohaHealth *remote*

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 *San-Francisco, CA*

consultant

- 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:
  - 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:
  - 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
Oct 2010

ApolloGrp.edu *San-Francisco, CA*

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 *San-Francisco, CA*

Programmar/Analyst III

Medical-Informatics research (relating to clinical-trails) in Lisp/KM, and Natural-Language-Processing in Java/etc; paper with

Stanford group; ontology dev/use [Lisp, KM, ..]

Sep 2007
Feb 2001

Freelance *Chicago/Boston*

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
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/ 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/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.fbk.eu

EDUCATION

University of Ilinois, 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/...:

19+ years overall	*Object Orientated* [14+ years]	*Rule-Based KnRep& Reasoning:* [10+ years]:	Libs:	Databases:	Operating-Systems:
C(6+ years) FORTRAN(6+ yrs) Scheme (~1 yr) MUMPS (1/2yr)..	Smalltalk (~1 yr) C++ (1+yr) Python(5+yrs), Java/Scala (1+ yr)	OPS5, Prolog, GoldWorks(<1yr) CLIPS(4+yrs),ART(4+years)	Viz: *Open*GL(3+ yrs) HPC: PVM (1+yr)	MS-Jet/SQL, MySQL PostgreSQL, ORDB	NeXTSTEP, MS(NT..XP) (8+ yrs) 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 persistance &other NoSQL	OS-X.Darwin(10+ years)

github opensource examples

as a pdf and latest-talk . . . .