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 Knowledge-Based aids, for process improvement to teaching. AI: Knowledge-Representation&Reasoning, Rules, Kn-Acq, NLP, ML, ...

WORK EXPERIENCE

Present – Jun 2018

AlohaHealth *remote*

Sr AI Research-Engineer

Part of a startup built on the topic of my UCSF research. Semantic search for clinical trials. [graph store/s]

Aug 2023 – Nov 2019

National Center for Supercomputing Applications *Urbana, IL*

Sr Research Software Engineer

- All the PoCs for earthcube.org/geocodes incl. organizing others to bring in a great NSF review
- Focus on semantics/metadata search, with some NLP and sim. [Python/SPARQL...]

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]

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 start-ups in AI: fashion blog to trends, sport dbpedia info, work chatbot
- 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, to help with metal health management
- Continued to build skills around ML, Semantic-Web/Linked-Data, and Knowledge-Engineering, with these courses, from:
  - Coursera: Data Analysis, Data Science (with distinction), Machine Learning (with distinction), Discrete Optimization (audit)
  - openHPI: Semantic Web, Knowledge Engineering, Kn Eng w/Semantic Web technology, LinkedDataEngineering
  - Stanford: 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 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

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 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

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	*Rule-Based KnRep& Reasoning:*10+yr	Libs:	Databases:	Operating-Systems:
C(6+yr) FORTRAN(6+yr) Scheme(~1 yr) MUMPS(1/2yr)..	Smalltalk(1yr),C++(1+yr) Python(5+yr), Java/Scala(1+yr)	OPS5, Prolog,GoldWorks(1yr) CLIPS(4+yr),ART(4+yr),	Viz: *Open*GL(3+yr) HPC: PVM (1+yr)	MS-Jet/SQL, MySQL PostgreSQL, ORDB	NeXTSTEP, MS(NT..XP) (8+yr) UNIX (18+yr),.GNULinux
Lisp (7+yr CommonLisp 10+yr others)	CLOS[CL -Object-System]	Knowledge-Machine(3+yr), JESS(1 yr),Protege(6+yr)	WS:Tomcat/Axis SOAP/REST	Graph&triple persistance &other NoSQL	OS-X.Darwin(10+yr)

some opensource examples at: github.com/MBcode .github.io

as html/ pdf and latest-talk . .