JACK HODGES, Ph.D.

147 Arbor Lane, Moss Beach, CA 94038
(650) 728-0938, jhodgesatmb@gmail.com
http://arbor-studios.com/pubs

SUMMARY OF QUALIFICATIONS

- Over 25 years in AI research in natural language processing, machine learning, and knowledge representation
- Over 25 years of software development in research and education
- Over 20 years work in structured data modeling/representation
- Over 10 years managing software development teams
- Over 6 years of experience architecting/designing declarative UIs and rule-based systems
- Over 10 years experience in architect/lead/software development role
- Over 6 years of experience architecting/designing commercial client-server applications
- Over 5 years of experience architecting/designing commercial REST-based applications
- Over 5 years designing, developing, and deploying iPhone/iPad mobile applications
- Over 12 years working with aerospace companies and projects (with security clearances)
- Have worked in all sectors and sizes: government, academic, private sector, startup
- Strong record of creative achievement and intellectual property development
- Expert in requirements articulation both in writing and presentation
- Strong track record of full life-cycle project development/management
- Strong record of meeting design, development, and release schedules
- History of evaluating/selecting the appropriate technology and implementation strategy
- Demonstrated expertise in managing/mentoring engineers
- Focus on good software engineering practices and software maintainability
- Able to work with onshore/offshore engineering and cross-functional groups

WORK EXPERIENCE

05/2014-Present **Senior Research Scientist for Siemens**

- Semantic technologies for Web/Internet of Things in factory automation, health care, smart grid, and smart building scenarios.
- Design and development of a semantic information framework for WoT/IoT.
- Ontology development, mapping, and repository population.
- Semantic application development (RESTful semantic web services).
- Prototypes in wearables/physician-assisted diagnosis, wearable data disambiguation, semantics in the smart grid marketplace, M2M device interactions, and model-based standards document generation.
- Semantic modeling of industrial standards EDDL, ISA 88/95, OPC UA for use in plug and play and plug, automate factory, horizontal and vertical integration automation scenarios.

12/2012-Present **Board Member for QUDT.org**

- QUDT is a Quantities, Units, Dimensions, and Datatypes set of ontologies and vocabularies. I was a member of the team that developed it and helped with the model-based document generation. I also set up QUDT.org as non-profit organization and received IRS 501 (c)(3) approval.

12/2012-2/2013 **Consultant for TopQuadrant**

- Worked on QUDT (quantities, units, dimensions and data types ontologies) for NASA.
- Worked on Smart Grid Amazon Cloud hosting for Carnegie Mellon West (pro bono).
- Ontology design, data mining, model-based document generation.
- Development using OWL/RDF in Topbraid Composer, SPARQL, SWP, LaTeX.

8/2011-12/2012 **Information Architect for UARC at NASA Ames Research Center**

- Working on next-gen MDM/Information Architecture for NASA.
- Interaction with stakeholders across the agency.
- Documentation of requirements and specifications.
- Development using OWL/RDF in Topbraid Composer, SWP.
- Unclassified clearance.

3/2009-Present **Co-Founder of Arbor Studios**

- iPhone/iPad applications design and development. See http://arbor-studios.com or Apple App Store for ThirdAveWind, ThirdAveView, ThirdAveSuite, ARCCCE, and YogiAssistant. Additionally, two location-based apps have been developed for other companies: RPetsMD, and GOEVOO. Two augmented reality apps: ShameOnYou, a political satire app, and MovieXPhone, an app to identify phone use in theaters. One semantic search app that was developed for NASA but never deployed to the app store.
- These applications make use of dial animation, audio, pan and zoom, tabbing, tables, data acquisition and parsing, location and accelerometer APIs, video streaming, OpenCV, and Bluetooth.

10/2008-12/2010 **Knowledge Engineer for UARC at NASA Ames Research Center**

- Information Architecture group of Intelligent Systems Division.
- Information model development and representation using semantic web technologies.
- Helped develop the Telemetry, Command, and Messaging in XML (TCMx) models.
- Led the TCMx Working Group and standards work associated with TCMx.
- Command, Control, and Telemetry Repository (CCTR) group participation.
- Extensible Telemetric and Command Exchange (XTCE) schema modeling, usage, and requirements work. Led XTCE Working Group.
- Focus on interoperability, exchange, and persistence.
- Developed triple store and XML database implementations for telemetry and command repositories using XTCE.
- Worked directly with many NASA center and contract personnel.
- Unclassified clearance.

4/2006-10/2008 **Software Architect and Team Lead for UARC at NASA Ames Research Center**

- Next-generation flight control software in MCT group of Intelligent Systems Division.
- Component modeling and adaptive software, declarative and adaptive graphical user interface application development/runtime environment, distributed information architecture, pub/sub component and system communications, rule-based systems technologies, semantic technologies.
- Declarative UIs, Semantic web, adaptive software, and rule-based systems technologies.
- Co-architect for system and subsystems.
- Designer and developer for component toolkit, rule engine, configuration manager.
- Led on time delivery of product to customer.
- Technical specifications author for project.
- Team leading and presentations.
- Unclassified clearance.

9/2002-3/2006 **Staff Engineer/Scientist/Team Lead at Electronics for Imaging, Foster City**

- Software Architect and Team Lead for WebTools redesign using a pure Model 2 architecture based on XML UI definition and rule-based constraints processing.
- Functional specifications for project.
- Implementation plan and resource allocation for project.
- Design, development, and testing of system component prototypes.
- Team management for development of first 15 product releases.

- Interaction with all key departments (Product Planning, QA, Release Engineering, Design, Networking, Server Communications, upper management).
- Development of presentation/middle tier components for an N-tiered client that supports remote construction and submission of print jobs.

9/2001-10/2002 **Co-Founder and Chief Technology Officer at BigTribe Corporation, San Francisco**

- Wireless location based services.
- Architected N-tiered software environment and applications.
- Designed/implemented components in all application layers. Friend finder demo appl.
- Developed intellectual property: wrote two patent applications.
- Interviewed, hired, and managed the engineering team.
- Interacted with standard groups (OpenLS),vendors and technical partners.

8/2000-10/2001 **Senior Director of Technology at NextMonet, Inc., San Francisco**

- Senior technical member of the company
- Planning and interactions with senior management, staff, partners.
- Led the engineering effort to merge an acquired company's 2-tiered (IIS/ASP/MSSQL) architecture and functionality to the NextMonet N-tiered (ATG/Oracle) architecture, on time, within budget, on a skeleton staff.
- Led migration from one ISP (colo) to another without losing uptime.
- Architected and designed all engineering projects, including functional requirements and specifications, resource allocation, and project management. Major projects designed include: online catalog, framing of art, smart browse, text-based search, more-like-this search, shipping, promotions, anonymous shopping cart, and data migration.
- Managed a team of 5-12, including project prioritization and scheduling, staffing, interviews, hiring and performance reviews, as well as project tracking.
- Provided technical mentoring and guidance on site usability, website development, server side programming, and data modeling.
- Developed Java servlets, beans, transactional beans, some DHTML, and some XML.
- Initiated reverse engineering of the website into UML.
- Developed boilerplates for functional specifications and style guidelines.

5/2000-8/2000 **Software Architect at Headlight, Inc., San Francisco**

- Technical expert on online learning and educational technology.
- Responsible for educational assessment strategies and learning objects.
- Architected an N-tiered EJB/eCommerce site. Developed a UML model of 150+ use cases and sequence diagrams for moving the entire product to WebLogic 5.1/Oracle.
- Managed the installation of WebLogic and Oracle on Sun E450s.
- Developed a JSP/Bean/Servlet/JDBC prototype of 30% of the company's website using an MS SQL Server database.
- Supervised the migration of the MS SQL database content to Oracle.
- Managed a small team of 1 developer, 1 integration specialist and 1 DBA on the project.

9/1999–3/2000 **Senior Staff Engineer at Neuromedia, Inc., San Francisco**

- Led the Methodology and Language groups design and development efforts.
- Developed a new methodology for implementing virtual customer service representatives (patented), and performed the preliminary analysis and design to implement the concept in the NeuroServer authoring environment.
- Interacted with all departments and management levels during the design and development phases of the project.
- Wrote the project design specification and the functional specifications.
- Developed the implementation plan and resource allocation.
- Led the development of the first two development cycles of the project, and interacted with documentation, training, integration and testing groups.
- Utilized UML tools in the design/specification/documentation phases of the project.
- Was ahead of the development timeline.
- Wrote the patent application and worked closely with the patent attorney.

1/1990-6/2003 **Associate Professor of Computer Science, San Francisco State University**

- Tenured in 1996.
- Development of DOSE: A Distributed On-Line Student Assessment model in Java/C++.
- Courses developed/taught: eCommerce architecture design and development, Programming in Java, C++, C, Pascal, and Common Lisp, UNIX, Multimedia Tools, Data Structures in C++ and C, Natural Language Processing, Artificial Intelligence, both in Common Lisp and Java, Interface Design and Development in Java, Knowledge Representation, Internet programming seminars in HTML and CGI.

6/1978-6/1989 **Member of the Technical Staff III, Rockwell Rocketdyne**

- FEM modeling of space shuttle engine and space vehicle components.
- Specialist in rotating machinery (aka rotordynamics).
- Specialist in alternative energy sources (flywheels, pumps, turbines).
- Worked with airborne systems for the DoD.
- Secret clearance.

PROFESSIONAL EDUCATION

Ph.D.	**University of California at Los Angeles, California** Computer Science Department, School of Engineering Knowledge Representation, Computational invention and problem solving, Natural language understanding	1993
M.S.E.	**The University of Michigan, Ann Arbor, Michigan** Department of Aerospace Engineering	1978
M.S.E.	**The University of Michigan, Ann Arbor, Michigan** Department of Bio-Engineering - Incomplete	
B.S.E.	**The University of Michigan, Ann Arbor, Michigan** Department of Aerospace Engineering	1976

TECHNICAL SKILLS

DEVELOPMENT ENVIRONMENTS

- Mantaray communications framework (P2P, pub/sub), Apache SOAP, gSOAP, and AXIS SOAP, Web Services using RPC SOAP/HTTP (to C++, J2EE, and EJB transaction tiers), REST, Client-Side middle tier integration using XSLT/XML/XMLC, Client-Side implementations using Javascript, JQuery, XML, JSP, WML, HTML, Barracuda and some J2ME, Java server side servlet programming with Jboss, BEA WebLogic 5.1/6, and ATG Dynamo 4.5/5.1 application and personalization servers, clients on Apache web servers, EJB design and development using Borland JBuilder 5-10. Database design and development in Mongo DB, Oracle 8/9, SAPDB, MS SQLServer, MySQL, Berkeley XML Database, eXist XML Database, JENA Database.

PROGRAMMING LANGUAGES

- Java (server and client, Swing), Objective C in XCode, C++, C, Pascal, Lisp, Prolog, and some Haskell and APL.

MODELING LANGUAGES

- OWL, RDF/RDFS, XML/Schema, WML, HTML.

SCRIPTING LANGUAGES

- UNIX shells, sed, awk, perl. CGI, Javascript, and JQuery.

TOOLS

- TopBraid Composer, Protégé, Semantic Works, Jena, Apache Ant, XML Spy, Oxygen, JBuilder, Eclipse, Visual Studio, TOAD rdbms visualization, Araxis, Beyond Compare, WinCVS, Clear Case Home Base, Bugzilla, JIRA, Dreamweaver, Microsoft Office, Project, Visio, Omnigraffle, FrameMaker, Together Control Center, Rational Rose, CC Rider, Nokia and OpenWave WAP emulators, Ericsson GML emulator.

OPERATING SYSTEMS USED/DEVELOPED IN

- Windows 7/XP/XPE/2K/NT/98/95, UNIX (Solaris, System V, BSD, Linux, Mach), MacOS X, iOS.

PUBLICATIONS

- Hodges, J., Kritzler, M., Michahelles, F., Lueder, S. (filed September, 2014). Semantic Integration of Wearable Sensors into Professional Healthcare. Patent application for Siemens, Inc. Docket No. 2014P19541US.
- Hodges, J., Greening, D. (filed March, 2002). Provisional patent application for BigTribe, Inc., Docket No. 22803-06746. Filed as perse patent application on March 12, 2003.
- Hodges, J., et al (filed January, 2001). Patent application for NativeMinds, Inc., Docket No. 451442000100.
- Sriram, D. et al (1997). *Intelligent Systems for Engineering: A Knowledge-based Approach*, Appendix B: Multiple Levels in Mechanical Device Representation, pp 729-788, Springer Verlag (co-author).
- Hodges, Jack (1995). *Introduction to Berkeley UNIX and ANSI C*, Prentice Hall. Second printing in 1998. Also translated to Japanese.
- Hodges, J. (1995). *Functional and Physical Object Characteristics and Object Recognition in Improvisation*, Computer Vision and Image Understanding, Academic Press, Vol. 62, No. 2, 147-163, September.
- Hodges. J. (1993). Naive Mechanics: A Computational Model for Representing and Reasoning about Simple Mechanical Devices, Ph.D. Dissertation, University of California at Los Angeles, UCLA-AI-93-01.
- Hodges, J. (1992). Naive mechanics: a computational model of device use and function in design improvisation, IEEE Expert, Vol. 7, Issue 1, 14-27.
- Hodges, J.B. (1989). Device Representation for Modeling Improvisation in Mechanical Use Situation, Proceedings of the Eleventh Annual Conference of the Cognitive Science Society, Lawrence Erlbaum Associates, Hillsdale, NJ, 643-650.
- Lange, T., Hodges, J.B., Fuenmayor, M., & Belyaev, L. (1989). DESCARTES: Development environment for simulating hybrid connectionist architectures, Proceedings of the 11th Annual Conference of the Cognitive Science Society, 698-705, Lawrence Erlbaum Associates.
- Several refereed journal, magazine, and conference proceedings in computational invention and problem solving, natural language processing, object recognition, computational models for simulating cognitive processes, and engineering published prior to 1989.