

RANDY KERBER

DATA SCIENTIST

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QUALIFICATIONS

20+ years of experience in research and application of advanced software technologies, including the fields of data analytics (machine learning, data mining), semantic technologies, optimization, and artificial intelligence. Experience in a variety of industries, including aerospace, retail, internet, software applications, health care, telecommunications, financial services.

Distinguishing competencies include:

- Identify high-value business problems likely to benefit from innovation
- Formulate and analyze potential technology solutions
- Design and develop proof-of-concept prototypes to demonstrate value
- Assess results to adapt and iterate towards deployable solutions

PROFESSIONAL EXPERIENCE

Independent Consultant, San Jose, CA

1999 to present (intermittent)

Software Technology Consultant

Work with clients to develop innovative solutions based on advanced information technologies such as data analytics (machine learning, data mining, predictive models), semantic technologies (ontology models, semantic web, business rules), optimization, artificial intelligence.

- Developed ontologies in Protege for organizing the structure of health benefit plans.
- Designed and developed a visual programming environment, for performing complex data mining tasks, that integrated multiple data manipulation and analysis components into a single environment, enabling a user to construct, execute and repeat complex *data flow* programs.
- Development of ontologies and logical inferencing software for developing rule bases of medical knowledge artifacts.
- Implemented a prototype to demonstrate a statistical analysis technique known as "Bootstrapping", to fulfill the requirements of a Phase I SBIR (Small Business Innovation Research) project.

Kavaii Analytics, Cupertino, CA

2011 to 2013

Chief Data Officer

- Responsible for management of data resources and use of analytics, to discover patterns in Medicare claims data to aid management of Managed Care programs.

Sandpiper Software, Los Altos, CA

2008 to 2011

Research Scientist

- Design and implementation of VOM (Visual Ontology Modeler), a software tool for creating and managing ontologies in the OWL ontology language by manipulating graphical elements in a diagram.

LongView International, Los Altos, CA

2011

Semantic Technology Consultant

- Design and implementation of ontology collaboration capabilities for building semantic models to categorize and validate portfolios of mortgage-backed securities.

Medco Health Solutions, Inc., San Jose, CA

2004 to 2008

Technical Specialist, Knowledge & Information Products.

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Responsible for application of semantic, optimization, and artificial intelligence technologies to the management and delivery of prescription drug benefit programs.

- Defined semantic domain models in OWL (using Protégé) and UML, to enable the subsequent development of enterprise applications.
- Created functional software prototypes to demonstrate feasibility of optimization approaches to operations problems including skills-based task assignment, workforce planning, and customer issue management.
- Prototypes implemented in Java, by extending code generated from domain models using the Eclipse Modeling Framework (EMF).
- Implemented core algorithm for routing of prescription drug problems to personnel with appropriate skills.

MyRaptor.com, San Francisco, CA

2000 to 2000

Director, R & D.

Responsible for design and implementation of a Bid Recommendation Engine for an internet startup.

- Developed software that provided recommendations for placing bids with on-line travel auction sites, such as Priceline and Hotwire, by collecting and analyzing airline fare and flight data.

Inference Corporation, Novato, CA

1999 to 2000

Senior Software Consultant

Designed and implemented data mining tools and processes, adding personalization and target-selling capabilities to their customer website management product.

Teradata / NCR

1995 to 1999

Data Mining Specialist, Data Mining Lab, San Diego, CA

- Performed analytics on large data warehouses for Teradata's data warehouse customers, creating statistical models to assess customer value and targeted marketing of products and services.
- Designed algorithms to include in the Teradata Warehouse Miner data mining product.
- Co-author of CRISP-DM (CRoss Industry Standard Process for Data Mining), the most widely-adopted data mining process model (see: http://www.kdnuggets.com/polls/2007/data_mining_methodology.htm), which guides data mining practitioners through the stages of a data analysis project.

Project Leader, Human Interface Technology Center, Atlanta, GA

- Performed a study of the early data mining tool marketplace to identify promising tools and companies for partnership and referral agreements.
- Analyzed grocery store sales data to predict effect of pricing and promotion strategies on sales volume and profit.
- Created a Case-Based Reasoning (CBR) prototype, for retrieval of patient cases with relevant similarity to the presenting case, as part of the National Medical Practices Knowledge Bank project, supported by NIST, Allegheny General Hospitals, and Carnegie Mellon University.

Lockheed Missiles and Space Company, Artificial Intelligence Center, Palo Alto, CA 1986 to 1995

Research Scientist

Conducted research in machine learning, Bayesian inference, knowledge representation (semantics, ontologies), and case-based reasoning. Defined scope of research projects, developed prototypes to test and demonstrate capabilities, presented and published results, and pursued funding from government research funding organizations.

- Created rule induction application (generates predictive rules from data), which Lockheed made the basis of a commercialization effort. The tool, called Recon™, was purchased by two mutual fund customers for use in analyzing equity portfolios.

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University of Southern California / Information Sciences Institute (ISI), Marina del Rey, California

Research Assistant

- Research in machine learning, generation of software agents from specification of goals and constraints.

TECHNICAL COMPETENCIES

- Knowledge of strengths and weakness of machine learning and data mining algorithms.
- Extensive experience transforming disparate data sources into unified operational datasets (i.e., digestible by data mining algorithms).
- As co-author of CRISP-DM, familiar with all phases of performing data mining analysis projects.
- Experience with multiple analytics tools and software languages, plus self-implemented algorithms and data manipulation tools.
- Deep knowledge of OWL2 and RDF ontology languages, and semantic tools including Manchester OWL API, Protégé, LOOM, Ontolingua. Also SWRL, Pellet, Sesame, and SPARQL.
- Extensive software experience. Have used Java since version 1.0, plus, Lisp, Python, Perl, Groovy, JavaScript.

EDUCATION

M.S. Computer Engineering, University of Southern California

B.S. Computer Science, University of Minnesota

PUBLICATIONS

- Kerber, R., Beck, H., Anand, T., Smart, B. (1998). Active Templates: Comprehensive Support for the Knowledge Discovery Process. In *Fourth Intl. Conference on Knowledge Discovery and Data Mining*.
- John, G., Miller, P., Kerber, R. (1996). Stock selection using rule induction. In *IEEE Expert: Intelligent Systems & their Applications*, vol.11.5, Oct. 1996.
- Kerber, R., Livezey, B., Simoudis, E. (1995). A hybrid system for data mining. In *Intelligent Hybrid Systems* (book chapter).
- Simoudis, E., Livezey, B., Kerber, R. (1994). Integrating inductive and deductive reasoning for database mining. In *Proceedings of the AAAI-94 Workshop on Knowledge Discovery in Databases*.
- Kerber, R. (1992). ChiMerge: Discretization of numeric attributes. In *Proceedings of the Tenth National Conference on Artificial Intelligence (AAAI-92)*.
- Kerber, R. (1991). Learning classification rules from examples. In *Proceedings of the AAAI-91 Workshop on Knowledge Discovery in Databases*.
- Barletta, R., Kerber, R. (1989). Improving explanation-based indexing with empirical learning. In *Proceedings of the Sixth International Workshop on Machine Learning*.
- Kerber, R. (1988). Using a generalization hierarchy to learn from examples. In *Proceedings of the Fifth International Conference on Machine Learning*.

PATENTS

- Tate, B.; Pricer, J.; Anand, T.; Kerber, R. SQL-based Analytic Algorithm for Association. U.S. Patent #6,611,829, awarded Aug 26, 2003.
- Cunningham, S.; Kerber, R. Method and Apparatus for Optimizing Promotional Sale of Products Based Upon Historical Data. U.S. Patent #6,029,139, awarded Feb 22, 2000.
- Simoudis, E.; Livezey, B.; Kerber, R. Method for Generating Predictive Models in a Computer System. U.S. Patent #5,692,107, awarded Nov. 25, 1997.