

Summary of Expertise

Areas: Semantic Web, Ontology Engineering, Information Retrieval, Machine Learning, Knowledge Discovery, and Digital Library

Programming Languages: Extensive experience on Java, Perl, C++, JavaScript, XML, XSLT, SQL, SPARQL

Operating Systems: Good working knowledge of Unix, Linux, and Windows

Utilities: Hadoop, Indri, Weka, Jena, Protégé, Matlab, SPSS

Educational History

9/2003 - 4/2008: Ph.D., School of Information Sciences, University of Pittsburgh. Thesis: Ontology Mapping: Towards Semantic Interoperability in the WWW

8/2002 - 6/2003: Graduate Student, Department of Computer Science, Purdue University.

9/1996 - 6/1999: M.S., Dept. of Computer Science, China University of Mining Tech. (CUMT) Thesis: A New Image Segmentation Algorithm for the Multi-Connected Digital Image with Very Similar Gray Level

9/1992 - 6/1996: B.S., Dept. of Computer Science, CUMT

Teaching Experience

4/2005: Teaching Eligibility Certificate, University of Pittsburgh

- Passed University's Teaching Practicum and English Comprehensive Test with excellence.
- Be eligible to teach graduate and undergraduate courses at University of Pittsburgh.

9/2003 - 12/2006: Teaching Assistant, School of Information Sciences, University of Pittsburgh

- Instructed lectures (occasionally), held recitation and lab session, organized discussion about course materials, and graded homework for graduate courses. Videotapes and students evaluation of some course are available upon request. Course list includes:

INFSCI 2140 Information Storage & Retrieval

INFSCI 2120 Information and Coding Theory

INFSCI 2770 Document Processing (now is INFSCI 2560 Web Technologies and Standards and INFSCI 2730 E-Business)

INFSCI 2000 Introduction to Information Sciences

- Instructed lectures (occasionally), held recitation and lab session, helped students in their team projects, and graded homework and quizzes for undergraduate courses. Samples of course syllabus, lesson plan, class assess tests, homework assignment, and exam questions are available upon request. Course list includes:

INFSCI 0015 Programming Design and Software Tools

INFSCI 0012 Introduction to Programming

INFSCI 1030 Information Storage & Retrieval

INFSCI 1004 Telecommunication

9/2000 – 4/2002: Technical Instructor, China Education Electronics Corp. (CEEC)

- Instructed lectures on Software Systems Development Courses at CEEC training center. Course list includes:

SSD3 Object-Oriented Programming and Design
SSD9 Software Specification, Test and Maintenance

- Gave talks on CEEC technical colloquium.

9/1997 - 6/1998: Lecture Instructor, Department of Computer Science, CUMT

- Co-instructed two undergraduate courses. Be responsible for giving lectures, advising, and designing homework assignment and exam questions. Course list includes:

CS105 Multimedia Technology
CS110 Windows Application Programming

Research Experience

1/2008 – present: Research Scientist, SAP Research, Palo Alto, CA

Continuous Information SenseMaking

5/2004 – 12/2007: Research Assistant, School of Information Sciences, University of Pittsburgh

• **Research on Ontology Mapping (Dissertation Topic)**

- Proposed a new generic ontology mapping approach based on propagation theory, information retrieval techniques, machine learning algorithms and artificial intelligence model (IAC neural network).
- Utilized Hadoop to support distributed parallel computing to process huge amounts of data.
- Integrated Indri search engine to find mappings between large ontologies by treating the mapping problem as an information retrieval task.
- Exploited machine learning techniques (SVM, boosted decision tree and logistic regression) to solve ontology mapping problem by treating it as a binary classification problem.
- Applied the interactive activation network in the context of ontology mapping to deal with ontology constraints satisfaction problem.
- Defined the harmony of similarity metrics of ontologies, adaptively aggregate different similarities and mapping strategies according to the level of harmony.
- Designed and developed the PRIOR and the PRIOR+ systems, two generic and automatic ontology mapping tools that gained good place at OAEI Ontology Matching campaign 2006 and 2007, analyzed results and wrote reports.

• **Research on Semantic Information Access**

- Proposed an ontology-based content management and access framework for digital library based e-learning systems.
- Designed and generated a formal Digital Library Course Ontology from scratch.
- Developed the DiLight system, an ontology-based digital library system for e-learning environments, on the top of the DSpace, an open source digital library platform.

- Designed and implemented semantic information access, i.e., ontology-based search, ontology-based navigation, and associated recommendation, in the DiLight.
- Conducted formal user studies on evaluating access to course materials in the DiLight, analyzed results and wrote the report.

- **Other Researches**

- Researched and conducted experiments with various machine learning algorithms (i.e., Naïve Bayes and J48 decision tree) to solve schema matching problem.
- Researched on geographic named entity disambiguation, integrated named entity and ontology to support information retrieval.
- Designed and implemented JCrawler, a Web crawler for information access and extraction.
- Did term projects on the implementation of GIS route optimization algorithm and Poker Robot.

9/1996 - 6/1999: Research Assistant, Department of Computer Science, CUMT

- Researched, surveyed, and compared existing theories and methods in image segmentation. Proposed and implemented a new image segmentation algorithm for the multi-connected digital image with very similar gray level. (Master Thesis Topic)
- Designed and implemented the real-time control system in graphite fluidized bed using neural network.
- Developed English Exam Online @ CUMT, a web based application, using prevalent web technologies.

Industry Experience

1/2008 – present: Research Scientist, SAP Research, Palo Alto, CA

- Continuous Information SenseMaking

5/2005 - 12/2006: Software Engineer (Contractor), Lone Star Graphics

- Participated in building and maintaining the commercial web site <http://www.itsenclosures.com/>.
- Designed and developed the IDEAL financial information management system.

4/2002 - 7/2002: Sr. QA Engineer, OpenTV Inc. (Beijing Office)

- Wrote test plans and codes, and executed unit, integration and system test on the interactive TV software.

9/1999 - 4/2002: Various Roles, R&D Department, CEEC

- **As Vice Director**

- Be responsible for technical affairs of R&D department of about 30 people.
- Built teams, planned tasks, reviewed progresses and documents.
- Acted as a consultant on clients' projects.

- **As Team Leader**

- Led the engineering team of 8 people to design and develop the award-winning CEEC Distance Learning System (DLS) 1.0.
- Participated in designing and writing documents involving the whole software life cycle on the DLS 1.0.
- Built team, planned tasks, coordinated schedules, and reviewed documents and codes.
- **As Software Engineer**
 - Participated in the design and development of several educational software products. Product list includes:
CEEC Teaching Quality Evaluation System 1.0
CEEC Campus Communication System 1.0
CEEC Digital Library Management System 3.0
CEEC School Management Information System 4.0
 - Provided technical support for customer service.
- **As ISO9001 Internal Reviewer**
 - Reviewed all technical documents of R&D department at CEEC in fulfillment of the requirement for the ISO9001 certificate.
- **As Technical Instructor**
 - Instructed lectures on Software Systems Development Courses at CEEC training center.
 - Gave talks on CEEC technical colloquium.

Publications

- [1] **Ming Mao**, Yefei Peng and Michael Spring. "Integrating the IAC Neural Network in Ontology Mapping". The 17th International World Wide Web Conference. WWW 2008 (accepted)
- [2] **Ming Mao**. "Ontology Mapping: An Information Retrieval and Interactive Activation Network Based Approach". In K. Aberer et al. (Eds.): the Proceedings of 6th International Semantic Web Conference (ISWC/ASWC 2007), LNCS 4825, pp. 931–935, 2007
- [3] **Ming Mao**, Yefei Peng and Michael Spring. "A Profile Propagation and Information Retrieval Based Ontology Mapping Approach". In the Proceedings of the 3rd International Conference on Semantics, Knowledge and Grid (*research track*), Xi'an, China, 2007
- [4] **Ming Mao** and Yefei Peng. "The PRIOR+: Results for OAEI campaign 2007". In the Proceedings of the 2nd International Workshop on Ontology Matching (OM) at 6th International Semantic Web Conference (ISWC), Busan, Korea, 2007
- [5] **Ming Mao** and Yefei Peng. "The PRIOR: Results for OAEI campaign 2006". In the Proceedings of the 1st International Workshop on Ontology Matching (OM) at 5th International Semantic Web Conference (ISWC), pp. 165-172, Athens, GA, 2006
- [6] **Ming Mao**, Yefei Peng, and Daqing He. "DiLight: an Ontology-based Information Access System for E-Learning Environments". In the Proceedings of the 29th Annual International ACM SIGIR Conference on Research and Development in Information Retrieval. pp. 733. Seattle, WA, 2006

- [7] **Ming Mao**, Yefei Peng, and Daqing He, "Ontology-Based Content Management and Access Framework for Supporting E-Learning Systems". *wi-iatw*, pp. 220-226, 2006 IEEE/WIC/ACM International Conference on Web Intelligence and Intelligent Agent Technology (WI-IAT 2006 Workshops) (WI-IATW'06), 2006
- [8] Daqing He, **Ming Mao**, and Yefei Peng. "DiLight: a Digital Library based E-Learning Environment for Learning Digital Libraries". In T. Reeves & S. Yamashita (Eds.), Proceedings of World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education 2006 (pp. 2845-2852). Chesapeake, VA: AACE.
- [9] Yefei Peng, Daqing He, and **Ming Mao**. "Geographic Named Entity Disambiguation with Automatic Profile Generation". In the Proceedings of the 2006 IEEE/WIC/ACM International Conference on Web Intelligence, pp. 522-525, 2006
- [10] **Ming Mao**. "A New Image Segmentation Algorithm for the Multi-Connected Digital Image with Very Similar Gray Level". Master Thesis, Department of Computer Sciences, China University of Mining Technology. 1999 (in Chinese)
- [11] **Ming Mao** and Xiang Li "Real-time Control System in Graphite Fluidized Bed". New Technique and New Technology, pp. 32-38, vol.1, 1999 (in Chinese)
- [12] **Ming Mao** and Xiang Li "Research of Object Oriented Technology in CIMS". Microcomputer Application, pp. 150-159, vol.6, 1998 (in Chinese)

Invited Talks and Presentations

- Ontology Mapping and Semantic Information Access. In Chinese Academy of Agricultural Sciences. Beijing, China. November, 23rd. 2007.
- The PRIOR+ at OAEI campaign 2007. In the 2nd International Workshop on Ontology Matching (OM) at the 6th ISWC. Busan, Korea. November, 11th. 2007.
- Ontology Mapping: An Information Retrieval and Artificial Intelligence based Approach. In the Doctoral Consortium at the 6th ISWC. Busan, Korea. November, 11th. 2007.
- The PRIOR at OAEI campaign 2007. In the 2nd International Workshop on Ontology Matching (OM) at the 6th ISWC. Busan, Korea. November, 11th. 2007.
- The PRIOR at OAEI campaign 2006. In the 1st International Workshop on Ontology Matching (OM) at the 5th ISWC. Atlanta, GA. November, 5th. 2006.
- DiLight: an Ontology-based Information Access System for E-Learning Environments. In the SIGIR Conference. Seattle, WA. August, 7th. 2006.
- DiLight: a Digital Library based E-Learning Environment for Learning Digital Libraries. In the E-Learn Conference. Honolulu, Hawaii. October, 13th. 2006.
- DiLight: an Ontology-Based Content Management and Access Framework for Supporting E-Learning Systems. In I-Fest. University of Pittsburgh. November, 8th. 2006.
- Building a Digital Library for Learning Digital Libraries. In Teaching Excellence Fair. University of Pittsburgh. October, 29th. 2006.
- The Semantic Web Technologies. Guest lecture at the class of INFSCI 2770 Spring 2004.

Professional Activities

- Program Committee member of the 2008 International Conference on Semantic Web and Web Services (SWWS'08)
- Program Committee member of the 2008 International Conference on Information and Knowledge Engineering (IKE'08)
- Program Committee member of the Fourth International Workshop on Contexts and Ontologies (2008)
- Reviewer of the 29th International Conference on Information Technology Interfaces (2007)
- Microsoft Certified System Engineer (MCSE), Microsoft, 1998

Other Activities

- Journalist of CUMT University Times (1992-1996)
- President of the Student Association of School of Information and Electronics (1994-1995)
- Vice President of the Student Association of University, CUMT (1994-1995)

Honors and Awards

- Hoppers@KWeb Travel Award, ISWC, 2007
- Student Travel Award, SIGIR, 2006
- Excellent Student Scholarship of Graduate Student Academy, CUMT, 1997
- Directorate First-class Scholarship, CUMT, 1994, 1993

Reference

Available on request