

# Kai Pan

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**OBJECTIVE:** A software engineer position in software development

## TECHNICAL SKILLS:

- C/C++, Java, Visual C++, XML, SQL, HTML, XSLT, PHP, UNIX Shell, Scheme, Delphi
- MySQL, Informix, Oracle, PostgreSQL
- JDT, ANTLR, JavaCC
- Eclipse, CVS, Subversion, CodeSurfer, Rational ROSE, Rational ClearCase
- Participated in five middle or big projects for commercial management information systems developed in Visual C++ on an Informix database since 1998
- Rich experience in object oriented design and programming
- Rich experience in database design and database application development

## EDUCATION:

- Ph.D. in Computer Science, University of California, Santa Cruz, 10/2006  
Research Areas: software evolution analysis, data mining, program analysis, hypertext versioning
- M.S. in Computer Science, University of California, Santa Cruz, 6/2003
- M.S. in Computer Science, Peking University, 7/1998
- B.S. in Computer Science, Peking University, 7/1995

## TECHNICAL EXPERIENCE:

### University of California, Santa Cruz, CA, 9/2001 – present

#### *Research Assistant, Computer Science*

- Designed and developed *Memories of Bug Fixes* using Java (20K lines of code) and MySQL. *Memories of Bug Fixes* is a project that data-mines software change repositories, and utilizes the previous bug fixes in the repositories to predict bugs in new changes.
- Developed *PSMetrics* (4.6K lines of code in Java), which introduced 13 program slicing metrics for program, and used these metrics and machine learning algorithm to predicate bugs in source code.
- Proposed and implemented the *Program Slice Encoding* algorithm (9.8K lines of code in Java), which generates semantic fingerprints for C functions by encoding program slices in each function to hash values.
- Implemented CalDAV-neon, which extends neon, an HTTP and WebDAV client library, to support CalDAV protocol. CalDAV is a protocol enabling calendar access via WebDAV.
- Developed *Chryasant* (8.6K lines of code in C), which provides version controls to hypertext documents.
- Worked on the *Bamboo* project in a team using C (6K lines of code) and MySQL, which provides automatic generation of version control repositories.
- My PhD. research is supervised by Prof. Jim Whitehead.

### Adobe Systems Incorporated, San Jose, California, 9/2002 – 12/2002

#### *Product Interoperability Team Intern*

- Designed and developed a database-driven interoperability test suite (9K lines of code in C) for the WebDAV protocol using GNU C and MySQL on Linux.

## **Adobe Systems Incorporated, San Jose, California, 6/2002 – 9/2002**

### ***Product Interoperability Team Intern***

- Developed an enhanced interoperability testing tool (4.3K lines of code in C) for WebDAV servers based on *Litmus* using GNU C on Linux.

## **Catacomb, Open Source Project, 4/2002 – 9/2004**

### ***Team Member***

- Catacomb (<http://www.webdav.org/catacomb>) is a WebDAV repository module for use with the Apache WebDAV module, `mod_dav`. Both WebDAV and DASL protocols are implemented in Catacomb.
- Designed an algorithm for translating DASL queries into SQL.
- Developed the database layer module for Catacomb using GNU C and MySQL on Linux.

## **Beida Jade Bird Sci-Tech Co. Ltd., Beijing, China, 7/1998 – 9/2001**

### ***Project Manager/Manager/Technology Management***

- Provided technical and project leadership in the development of Jade Bird's Commercial Management Information System (JB-CMIS), version 5.0. JB-CMIS is a sophisticated system providing integrated point-of-sale (POS), store and warehouse inventory control, sales tracking, and vendor account balance management for large department stores and supermarket chains.
- Managed a team to perform a complete reengineering of the JB-CMIS product line based on 3 years of personal and corporate experience building and deploying previous CMIS versions.
- Performed product line requirements analysis and UML-based object-oriented design. Instituted software process improvements, including improvements in architecture, design, database schema, documentation, coding standards, and use of configuration management.
- As Project Manager, managed teams of 5 to 12 people tailoring and deploying successive generations of the CMIS technology.
- 5.0 versions of CMIS were written in Delphi and Unix C++, on an Oracle database.
- Pre 5.0 versions of CMIS (500K lines of C++ code in total and I contributed about 50K lines) were written in Visual C++ and Unix C++, on an Informix database.

## **PUBLICATIONS:**

1. Kai Pan, Sunghun Kim, E. James Whitehead, Jr., "Bug Classification Using Program Slicing Metrics." Proceedings of the Sixth IEEE International Workshop on Source Code Analysis and Manipulation, September 27-29, 2006.
2. Sunghun Kim, Kai Pan, E. James Whitehead, Jr., "Micro Pattern Evolution." Proceedings of MSR 2006: International Workshop on Mining Software Repositories, Shanghai, China, May 22-23, 2006.
3. Kai Pan, E. James Whitehead, Jr., Guozheng Ge, "Textual and Behavioral Views of Function Changes." Proceedings of the 3rd International Workshop on Traceability in Emerging Forms of Software Engineering (TEFSE'05), November 2005, pp. 8-13.
4. Sunghun Kim, Kai Pan, E. James Whitehead, Jr., "When Functions Change Their Names: Automatic Detection of Origin Relationships." Proceedings of the 12th Working Conference on Reverse Engineering (WCRE 2005), November 8-11, 2005, Pittsburgh, Pennsylvania.
5. Kai Pan, E. James Whitehead, Jr., Guozheng Ge, "Hypertext Versioning for Embedded Link Models." Proceedings of the Fifteenth ACM Conference on Hypertext and Hypermedia (Hypertext 2004), August 9-13, 2004, Santa Cruz, California, pp. 195-204.
6. E. James Whitehead, Jr., Guozheng Ge, Kai Pan, "Automatic Generation of Hypertext System Repositories, A Model Driven Approach." Proceedings of the Fifteenth ACM Conference on Hypertext and Hypermedia (Hypertext 2004), August 9-13, 2004, Santa Cruz, California, pp. 205-214.
7. Sunghun Kim, Kai Pan, E. James Whitehead, Jr., "WebDAV based Open Source Collaborative Development Environment." In Proceedings of the 4th Workshop on Open Source Software Engineering, held in conjunction with ICSE 2004, May 25, 2004, Edinburgh, Scotland, pp. 54-57.
8. Sunghun Kim, Kai Pan, Elias Sinderson, E. James Whitehead, Jr., "Architecture and Data Model of a WebDAV-based Collaborative System." In Proceedings of 2004 Collaborative Technologies Symposium (CTS'04), San Diego, California, USA, January 18-21, 2004.