

Somo S Banerjee

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JOB OBJECTIVE =====

- A full-time position in software engineering, with emphasis on software architecture and design.

HIGHLIGHTS=====

- 7 years of software experience including 4 years of experience in software architecting, design, and development.
- Currently pursuing PhD in Computer Science specializing in "Software Architecture" at the Center for Software Engineering, University of Southern California.
- Current research includes development of a framework for reliability estimation; and injection of security into software system at the software architecture level as a part of NSF (National Science Foundation) research.
- M.S in Computer Science from Louisiana State University, with thesis on software architecture styles and representational methods.

EDUCATION & RESEARCH EXPERIENCE=====

University of Southern California (2004-present), GPA - 3.8

PhD in Computer Science, Center for Software Engineering (USC-CSE)

- Research, design and development:
 - Development of a framework in java based on Markov models and Bayesian networks for reliability estimation of software systems including web services, sensor networks and robotic applications at the architectural level (NSF Grant);
 - Reverse engineered implemented software systems, including Argo UML, from code to extract the system design (class diagram, sequence diagram) and architecture (component diagram and state diagram);
 - Development of a tool to simulate the expected operational profile of a software system using it's architectural specifications (NSF Grant);
 - Designed class diagrams, package diagram, activity diagram, and deployment diagram using rational rose; and implemented using java, a decentralized distributed application for data and resource sharing between CPU-limited devices like PDAs; Implemented design patterns including Singleton, Factory, Abstract Factory, Proxy, Iterator, and Template.
 - Development of a high level framework for injection of security into software systems at the architectural level;
 - Developed software architecture models like dynamic behavior (state diagram), interface, static behavior (sequence behavior), interaction protocol (collaboration diagram) for SCROver, a robotic simulation test-bed (NSF Grant).

Louisiana State University (2002-2004), GPA - 3.8

M.S. in Computer Science

- To represent a C program in collapsible blocks, designed and developed a java based "Block-Builder" application. Implemented design patterns including Singleton, Factory, Facade, Mediator, and Iterator.

- Modified the conventional data flow diagram (DFD) to AND-OR DFD for accurate representation of software architectural models.
- Researched the merits and demerits of UML as a software architecture representation language.

National Institute of Technology, India (1995-1999), GPA - 3.9
 B.S. in Electrical & Computer Engineering,

TECHNICAL SKILLS =====

- **Methodologies:** UML, ADLs (Architecture Description Languages), OOD, OOA, OOPS, RUP, Services-Oriented Architecture (SOA).
- **Software design tools:** Rational Rose, Enterprise Architect, Microsoft Visio, Omondo
- **Languages and Technologies:** Core J2SE libraries, JavaBeans, Swing, AWT and JFC, Security (JCE, JSSE, JAAS), Java design patterns, J2EE, EJB, servlets, struts, JSP, JDO, JavaMail, JMS, JTA, JAAS, JNDI, JAXP, JDBC, JTAPI, J2EE design patterns, JMS, CORBA, RMI, Web Services, AJAX.
- **Framework:** JUnit, ANT, spring, hibernate, AOP.
- **XML:** XML Namespaces, RSS, XSL, XSLT, SOAP and XML-RPC, XHTML, DOM, CSS.
- **Other languages:** C, C++, ASP, SQL, PL/SQL.
- **Scripting languages:** JavaScript, Python, PHP, Perl, CGI script, vbscript.
- **IDE:** Eclipse, IntelliJ.
- **Version Control:** CVS, Perforce.
- **Operating Systems:** Windows XP, Unix, Linux, MacOS X and Solaris.
- **Application Servers:** BEA Weblogic 8.1/7.x/6.x, IBM websphere 6.0, Apache Tomcat 5.0/4.x, IIS 6.0.
- **Database:** Oracle 10g/9i/8i, SQL Server 7.x., MySQL
- **Domain Knowledge:** Telecommunications, Banking, Insurance, Business incubation.

EXPERIENCE =====

Employer: Louisiana Business & Technology Center, Baton Rouge, CA

Duration: Summers 2002-2004 (Internship)

Job Title: Software Development Intern

The Louisiana Business & Technology Center (LBTC) endeavors to enhance economic development in Louisiana through the support of existing small businesses and the development of new businesses. Involved in developing tools for Management assistance and small business counseling services, Technology Transfer, Financial analysis in preparation for access to capital, and Entrepreneurial educational training.

Responsibilities:

- Involved in usability design of website layout of LBTC web portal using use cases.
- Involved in usability analysis and design of data organization using use cases.

- Managed, transformed requirements into design document, and delivered all aspects of a tool for management assistance and small business counseling services.
- Fully responsible for a tool for financial analysis in preparation for access to capital: conceptualization, design, implementation, quality assurance, and maintenance.
- Responsible for making the existing web site more reliable by analyzing most failure conditions and providing solutions to them, performance improvement by introducing load balancer and cluster.
- Involved in database design using E-R modeling.
- Wrote queries, stored procedures, and triggers using SQL and PL/SQL for SQL Server and also involved in performance tuning of queries.
- Also involved to some extent in development of web modules and web portals using ASP, Java Script, VBScript, XML, DHTML etc. as the existing web site was based on MS technologies.

Environment:

UML, Rational Rose, ASP, VBScript, JavaScript, SQL, PL/SQL, DHTML, XML, SQL Server, Dream Weaver MX, IIS 6.0.

Employer: Satyam Computer Services Ltd., Secunderabad, India

Client: FISERV Inc., South Bend, IN

Duration: March 2001 – December 2001

Job Title: Sr. Software Engineer

FISERV Inc. is a leading financial services provider. This application, a Mortgage Business Application provides financial services to FISERV clients across USA, including trading in the secondary mortgage market and flotation of bonds in agreement with the rules set by FNMA (Federal National Mortgage Association) and FHLMC (Federal Housing Loan and Mortgage Corporation).

Responsibilities:

- Developed the entire application on MVC II architecture using Struts Framework.
- Based on the Use Cases, which were developed by interacting with business experts and current functionality available in green screens (Mainframe system), designed and developed an application to meet the requirements of the use cases and ensure the same functionality as in mainframe systems.
- As a Sr. Developer in the team, needed to ensure coordination between designers and developers, and that the progress of project meets target deadlines.
- Used Rational Rose to create class diagrams, activity diagrams, and sequence diagrams.
- Used J2EE technologies including servlets, JSP, EJB, and XML for implementation of server programming and user interface.
- Designed and developed backend Java components residing on different machines to exchange information and data using JMS.
- Deployed EJBs and Servlets on WebLogic application server.
- Implemented connection pooling for JDBC connections to Oracle database.

- Developed various queries, stored procedures, and triggers using SQL and PL/SQL for Oracle.
- Did unit testing using Junit.

Environment:

Java, J2EE, Struts, MVC, JDBC, JSP, Servlets, XML, HTML, EJB, JMS, SQL, PL/SQL, Oracle 8i, UML, Rational Rose, ANT, JNDI, Windows 2000

Employer: Satyam Computer Services Ltd., Secunderabad, India

Client: BPL, India

Duration: October 2000 – February 2001

Job Title: Software Engineer

BPL is a leading telecommunications provider in India. This web portal was a B2C application for potential subscribers and customers of BPL, and a point-of-sale website for their dealers and distributors.

Responsibilities:

- Involved in detailed design.
- Prepared process flow diagrams and designed the database.
- Prepared documentation for coding standards and GUI design.
- Performed OOAD using UML standards.
- Developed web pages using JSP, Java Script, and XML for various modules.
- Coded the database interaction module using JDBC-SQL, using JDBC Type 4 Driver for Oracle.
- Was involved in module level and integration testing.

Environment:

Java, HTML, AWT, JDBC, JavaScript, Servlets, Applets, Oracle, Windows NT

Employer: Satyam Computer Services Ltd., Secunderabad, India

Client: HOTREV, Singapore

Duration: February 2000 – October 2000

Job Title: Software Engineer

HotRev.com is an international trade portal out of Singapore for the steel industry. This application was a web-based B2B point-of-sale application for steel trading across the globe.

Responsibilities:

- Involved in detailed design.
- Prepared process flow diagrams and designed the database.
- Prepared documentation for coding standards and GUI design.
- Performed OOAD using UML standards.
- Developed web pages using JSP, Java Script, and VBScript for various modules.
- Coded the database interaction module using JDBC-SQL, using JDBC Type 4 Driver.

- Involved in writing SQL stored procedures and functions.
- Was involved in module level and integration testing.

Environment:

Java, HTML, AWT, JDBC, JSP, JavaScript, Servlets, Applets, Oracle, Windows NT

Employer: Satyam Computer Services Ltd., Secunderabad, India

Client: HLL-Lakme, Pune, India

Duration: September 1999 – January 2000

Job Title: Software Engineer

Developed a web-based B2C point-of-sale application to be used by customers for online registration and booking of services as well as for sale of cosmetics items online. The application is also used by distributors and retailers of Lakme’s products nationwide as a single-point access to the inventory and for all financial interactions.

Responsibilities:

- Involved in detailed design.
- Prepared process flow diagrams and designed the database.
- Prepared documentation for coding standards and GUI design.
- Performed OOAD using UML standards.
- Coded the main module in core JAVA.
- Developed applet-based user interfaces using JFC, SWING, AWT.
- Coded the database interaction module using JDBC-SQL, using JDBC Type 4 Driver.
- Involved in writing SQL stored procedures and functions.
- Was involved in module level and integration testing.

Environment:

Java, HTML, AWT, JDBC, JavaScript, Servlets, Applets, Oracle, Windows NT

RECENT PUBLICATIONS AND OTHER ACHIEVEMENTS =====

- Estimating Software Component Reliability by Leveraging Architectural Models. To appear in proceedings of The 28th International Conference on Software Engineering (ICSE06), Shanghai, China, May 2006.
- Engineering Reliability into Hybrid Systems via Rich Design Models: Recent Results and Current Directions.” In *Proceedings of the NSF Next Generation Software Program (NSFNGS) Workshop*, Rhodes Island, Greece, April 25-26, 2006.
- Leveraging Architectural Models to Inject Trust into Software Systems. *To appear in Proceedings of the ICSE 2005 Workshop on Software Engineering for Secure Systems -- Building Trustworthy Applications (SESS05)*, St. Louis, Missouri, May 15th-16th, 2005.
- Software Architecture: Styles and Representational Schemes. M.S. Thesis, Louisiana State University, 2004
- 2002-2004 Graduate Student Supplement Award, Louisiana State University
- 2000-2002 Star Performer, Satyam Computer Services Ltd., India
- 1995-1999 State-Level Undergraduate Merit Scholarship, India