

# Shamsuddin N. Ladha

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## CAREER OBJECTIVES

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- Engage in cutting edge applied research leading to deployable solutions that impact society at large.
- Use science and technology in areas related to environment, education, healthcare, rural development, etc.
- Extend knowledge boundaries in the related fields and generate high quality peer reviewed literature.

## EDUCATION

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**Ph.D. IITB-Monash Research Academy** [2012 expected]  
Computer Science, IIT Bombay and Monash University

*Visually Appealing and Intelligent Projection with Natural Human Interaction*

This work aims at creating visually better and smarter projections on multi-planar, non-projection optimized day-to-day surfaces like room corners, office cubicles, etc. Coupled with novel natural interaction, an intuitive, cost effective and realistic projection environment that is accessible to masses can be created.

Supervisor: Prof. Sharat Chandran (IIT Bombay) and Prof. Kate Smith-Miles (Monash University)  
Areas: Computer Vision, Image Processing, Human Computer Interaction

**MS Loyola University of Chicago, USA** [December 2002]  
Computer Science, GPA: 4.0 out of 4.0

**BE Thadomal Shahani Engineering College, Mumbai University** [June 2001]  
Computer Engineering, Percentage: 69.7

## SELECTED PUBLICATIONS LIST

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- Under review [2013]
- Under review [2013]
- Patent - Provisional specification filed [2012]
- Shamsuddin Ladha and Kate Smith-Miles and Sharat Chandran: "Global Illumination Compensation for Projection on Multi-planar Surfaces," *The Visual Computer* (Manuscript submitted) [2012]
- Shamsuddin Ladha and Kate Smith-Miles and Sharat Chandran: "Projection Defocus Correction using Adaptive Kernel Sampling and Geometric Correction in Dual-planar Environments," *IEEE Computer Vision and Pattern Recognition Workshops, PROCAMS* [2011]
- Shamsuddin Ladha and Kate Smith-Miles and Sharat Chandran: "Adaptive Kernel Sampling for Projector Defocus Blur Correction with Indirect Illumination Compensation in Multi-planar Environments," *Microsoft TechVista* (Poster) [2011]
- Shamsuddin Ladha and Buddhiraju Krishna Mohan: "Comparison of Object Based and Pixel Based Classification of High Resolution Satellite Images Using Artificial Neural Networks," *National Symposium on Security and Soft Computing* [2007]

## PROFESSIONAL EXPERIENCE

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### **Research Assistant, Centre for Studies in Resources Engineering, IIT Bombay** [2006 – 2007]

- Performed object based classification of high resolution satellite images using *Watershed Transform, Artificial Neural Networks, Support Vector Machines and Fuzzy Logic*.
- Investigated various tools and techniques for image processing and data classification.
- Published a paper on this work in less than a year at *National Symposium on Security and Soft Computing*

### **Software Architect and Engineer** [2002 onwards]

- Diversified experience in architecting, designing, developing, and deploying software across a multitude of domains, like computer vision, image processing, finance, healthcare, embedded systems, etc.
- Led and managed small teams to deliver high quality software systems within tight constraints. [Please see Appendix for more details]

## COMMUNITY ENGAGEMENT

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### **Governing Board Member, Prince Aly Khan Hospital** [2010 onwards]

- Liaised with the hospital's Information Technology (IT) team to rollout a new *Healthcare Management Information System* (HMIS) to streamline hospital processes and enhance patient safety.
- Provided guidance to the IT team on critical issues, backup, security, and procurement of resources.
- Coordinated with the hospital and the HMIS vendor to resolve outstanding issues.

### **Chairman, Aga Khan Education Board** [2007 – 2009]

- Led a team of about *125 volunteers* at the Mumbai level to design and implement programs that help students in succeeding at secular education.
- Programs like Phonetics and Grammar for English, Study techniques, Memory and Time Management, Debate Competition, etc. were conducted.
- Students who excel in studies were appreciated in front of the entire community.
- Special efforts, including provision of counseling and financial support, were made to curb students dropping out from mainstream education and reach out to children who did not have access to education.

## TEACHING EXPERIENCE

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### **Teaching Assistant, IIT Bombay**

Created and graded course assignments and projects, assisted students during hands-on-lab sessions.

- Software Systems Lab (Batch size: approx. 100) [Spring 2008]
- Digital Image Processing (Batch size: approx. 15) [Fall 2008/09]
- Computer Vision (Batch size: approx. 15) [Fall 2010]

### **Faculty, Loyola University of Chicago** [Spring 2003]

A course on *Basics of UNIX Operating System* was taught to a batch of undergraduate students. Designed course content, prepared and delivered lectures and demos, prepared and assessed tests and quizzes.

## JOINT RESEARCH PROJECTS

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- Participated in discussions to design a solution for “*Quantification of Protein Expression in Immunohistochemistry and Immunofluorochemistry*” with a B.Tech. student and thoroughly reviewed the implementation. This solution is now used by biologists in laboratories for cancer prognosis.

- Designed and implemented “SmartPro: A Natural User Interface Driven Projector” with an M.Tech. student. The solution has been patented.

## NOTABLE ACHIEVEMENTS

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- Represented Loyola University at the *Midwest Inter Collegiate ACM Programming Contest* [Nov 2002]  
Our team secured 20<sup>th</sup> position out of 105 teams.
- Worked as a student intern – *Argonne National Labs (USA)* [2002]
- Recipient of Tertiary Scholarship – *Aga Khan Education Service, India* [1997-2001]
- Received Best Student Award – *Rotary Club of South Bombay* [Mar 1995]

## KEY SKILLS

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<i>General</i>	Analytical and logical thinking, critical appreciation, writing and publishing, collaboration, leadership
<i>Programming Languages</i>	Java, C++, C#.NET, C, VB
<i>Software</i>	MATLAB (with Optimization and Image Processing Toolkits), POVRAY, SVM,
<i>Tools/Technologies</i>	ImageMagick, Eclipse IDE, eVC++, SVN, SoapUI, AXIS, Application Servers, JSP, Servlets, Webservices.
<i>Databases</i>	SQL Server, PostgreSQL, MySQL, Oracle
<i>Operating Systems</i>	Linux/Unix, Windows, Windows CE.NET (with scripting)
<i>Authoring Tools</i>	LaTeX, Microsoft Office, Open Office

## CONFERENCES ATTENDED

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- IEEE Conference on Computer Vision and Pattern Recognition. *Colorado, USA* [2011]
- Indian Conference on Computer Vision, Graphics and Image Processing. *Chennai, India* [2010]
- National Conference on Computer Vision, Pattern Recognition, Image Processing and Graphics. *Jaipur, India* [2010]
- Indian Conference on Computer Vision, Graphics and Image Processing. *Bhubhaneshwar, India* [2008]
- Workshop on Computer Vision. *Hyderabad, India* [2008]
- National Symposium on Security and Soft Computing. *Surat, India* [2007]

## PRESENTATIONS

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- Computer Vision and Pattern Recognition Workshops, PROCAMS (Oral and Poster) [2011]
- IITB-Monash Research Academy Annual Symposium (Oral and Poster) [2011]
- Microsoft TechVista (Poster) [2011]
- National Conference on Computer Vision, Pattern Recognition, Image Processing & Graphics (Oral) [2010]
- National Symposium on Security and Soft Computing (Oral) [2007]
- Several in-lab demos to visitor faculties and researchers

## LANGUAGES

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English, Hindi, Marathi, Gujarati

## REFERENCES

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**Prof. Sharat Chandran**

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**Prof. Kate Smith-Miles**

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## APPENDIX

### Software Development Experience

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**Company:** TEKchand, LLC

**Duration:** 2006 onwards and 2003

**Role:** Senior Software Consultant

ATM Software and Solution provider, which provides a cost-effective, switch based solution for enabling content and new services on multi-vendor ATMs. ATM Rewards Software Platform is a web-based ATM screen and receipt content development, management and delivery system. The application also supports targeted coupons, interactive advertisements, automated marketing messages, ATM personalization and more.

- Designed and implemented the core file transport engine to upload/download files from/to ATM.
- Implemented client side in C++ to transfer image files using FTP to and from ATM and download XML commands from server, execute them and send the results back to the server over socket connection. Recently migrated this component to C# and replaced backend with AXIS based web services
- Optimized client code (memory leak identification, redundant code elimination) and identified the source of a difficult to locate bug, which was crashing the application
- Created light web pages for faster download
- Implemented web services for customization and personalization of services provided to customers while they are performing transactions at ATM called as the CRM service and interfaced with ATM-Host.
- Implemented server side Java based classes using MVC and workflow patterns
- Migrated many client components from C++ to C# on ATM

**Environment:**

C#, C++, Eclipse, Java, JSP, Servlets, Java Beans, HTML, XML, CSS, XSD, SOAP, AXIS, Linux, Windows

**Company:** American EPAY, Inc (USA)

**Duration:** 2006 – 2007 and 2003

EPAY provides a comprehensive “Punch-to-Pay” solution. Millions of workers across USA punch everyday using EPAY’s various punching techniques, which include fingerprint matching on portable clients, Integrated Voice Recognition etc. It provides 24/7 access to supervisors about employee attendance. It also provides Debit payroll cards to eliminate paychecks.

- Designed and implemented a Wireless protocol for communication between client machines (WalTer) and backend server
- Revamped UI for consistency, standardization, ease of use and good look and feel
- Integrated a new biometric fingerprint reader module into existing code
- Suggested and implemented test cases for portable client hardware, which helped to reduce hardware failures at customer sites after deployment
- Created a solution for auto update of Daylight Savings Time on thousands of deployed units across US and UK
- Provided on site technical support to customers

**Environment:**

eVC++, Visual Studio .NET 2003, MS SQL Server, Subversion, VPN, XML, Sockets, MFC, Windows CE.NET

**Organization:** IIT Bombay, Centre of Studies in Resources and Engineering

**Duration:** 2006 – 2007

**Role:** Research and Development

- Studied various techniques on image processing using fuzzy logic, neural networks, SVM, etc. for processing high resolution remotely sensed images
- Extended existing image processing software to perform object classification by combining several techniques

- Training data (for neural networks) preparation, customization of network parameters for improved accuracy of classification
- Wrote a research paper and presented our work at National Symposium of Security and Soft Computing at SVNIT, Gandhinagar, 2007

**Environment:**

C++, LINUX, GIMP, SVM

**Company:** Epic Systems Corporation (USA)

**Duration:** 2004 – 2005

**Role:** Software Research and Development

Epic is one of the leading IT solution providers for healthcare industry. Ranked #1 in KLAS ratings, Epic provides an integrated suite of applications for inpatient, outpatient and remote access. A centralized post relational database system provides seamless access to patient data across the entire suite of applications.

- Lead Developer for our (Emergency Department - ED) team's reporting needs both operational and retrospective
- Member of the next generation clinical documentation tools team, which was responsible to create a suite of UI tools to capture clinical documentation data that would be rich in various widgets, quick, easy to use and visually attractive
- Responsible for design and code review of various projects undertaken by the ED team
- Wrote a tool to integrate external provider's relational data into our post relational database
- Frequently visited client sites (all across USA) for product deployment and upgrade and thereafter to get direct feedback and new client requirements

**Environment:**

VB, XML, InterSystems Cache, HTML, MS Access