15 Iceboat Terrace suite 1032, Toronto (ON) M5V 4A5 Email: schandrashekar@faculty.ocadu.ca / sambhavic@gmail.com Web: http://sambhavi.com Phone: +1 416 709 6270

## **Education**

**Ph.D.** (Information Systems) from the iSchool, University of Toronto

Thesis title: Is Hearing Believing? Perception of Online Information Credibility by Screen Reader Users who are Blind or Visually Impaired.

M.Sc. (Human-Computer Interaction & Ergonomics)-University College London, U.K.

Thesis title: Accessibility vs. Usability—where is the dividing line?

M.Sc. (Chemistry)-Indian Institute of Technology, Madras, India

Thesis title: *Electron Spin Resonance spectroscopic study of Gamma-irradiated hydroimidazole crystals.* 

## Fellowships & Awards

- MITACS Elevate Industrial Postdoctoral Fellowship (\$140,000)
- University of Toronto Doctoral scholarship & Research Assistantship (~ \$250,000)
- Travel Award to CAIS 2010 in Montreal from University of Toronto (\$500)
- Travel Award to CSUN 2009 in Los Angeles, CA from University of Toronto (\$1200)
- Travel Award to JCDL 2007 in Vancouver from National Science Foundation, USA (US\$ 1000)
- Travel Award to ASSETS 2006 in Portland, OR, from University of Toronto (\$500)
- Travel Award to ICCHP 2006 in Linz, Austria from University of Toronto (\$800)
- National Science Talent Scholarship from Government of India, undergrad & grad studies

# **Teaching**

### OCAD University-Faculty of Design (2011-present)

- Adjunct Professor in Research and Graduate Studies
- Sessional instructor, Faculty of Design, (MDes program in Inclusive Design (MDID))
- Contributing Faculty to MDID program since inception

#### Courses taught

Winter 2016 (18 students) (current)

- INCD 6013- Lab 4: Research Colloquium

Fall 2015 (18 students)

- INCD 6006-The Difference

Winter 2015 (17 students)

- INCD 6Co2-Experiential Research Lab (co-taught)

Fall 2014 (17 students)

- INCD 6Bo6-The Difference
- INCD 6Co2-Experiential Research Lab (co-taught)

Winter 2014

- INCD 6Co2-Experiential Research Lab (co-taught)

Fall 2013 (16 students)

- INCD 6B06-The Difference
- INCD 6Co2-Experiential Research Lab (co-taught)

# **Student Research Projects supervised** (as Committee Member) **2013-14**

- Angela Punshon: Creating an Inclusive Web Framework
- Brandon Laird: Time Mindfulness: Designing a Process Model and Prototype Application to Create a Preferred Future
- *Lester Leung*: Constructing an Inclusive Web Design Checklist for Health-Related Sites for Older Adults with Complex Chronic Disease
- Oi Chen: Improving Online Learning Experience through Enhanced Interactivity

#### 2014-15

- Geordie Graham: Inclusive strategies for the design of a mobile app for safe dosing in the hospital ICU
- Yijin Jiang: "OCADay" mobile app for integration of international students into local culture
- *Donna Saccutelli*: Providing Packaging Accessibility Through Information Design Thinking for Low Vision Shoppers
- *Hong Zou*: Empowering Screen Reader Users Using Voice Recognition and Computational Linguistics to Access Online Stock Market Charts and Graphs
- *David Lawson*: Building a Methodological Framework for Establishing a Socio-Economic Business Case for Inclusion
- Zheng Yang: Online Information Session: an Alternative Channel for Information Flow between Canadian Universities and Prospective Students
- *Claire Brooks*: Financial accessibility and inclusive value systems for finance, tax and accounting practices

#### 2015-16

- *Amita Pharshy*: Designing a safe, non-intrusive, game for children to potentially detect Child Sexual Abuse (CSA)
- Caren Watkins: MyZone: A Personalized, Inclusive Learning Environment
- Chenqui Lu: Designing An Assistive Naming App for Mandarin-Speaking Anomic Aphasia Patients
- Dennis Wayne Lagman: Does a "blind-first" approach to site design lead to better user experiences for sighted and non-sighted users?
- Jingyi Lai: Self-Thinking and Self-Learning: Designing an Easy Personal Tool for Making Visual Music
- Yu Lin: Designing a web browser tool for Chinese older adults
- Yu Zhang: A Culturally Inclusive AAC App for Children with Autism in China

#### University of Toronto-Faculty of Information (iSchool) (2006-2009)

Guest lecturer/workshop coordinator/Teaching Assistant

- Two workshops on 'Inclusive Design' under the Inforum Workshop Series for graduate students of the iSchool (January 2009)
- Guest session on 'Web Credibility' in 'FIS 2164H-Authority and Credibility in Online Communities' (January 2009)
- Session on 'Research Ethics Review at the U of T' to Ph.D. students in 'FIS3005Y–Advanced Seminar in Research Methodologies' (April 2008)
- Two workshops on 'Accessible Web Design' under the Inforum Workshop Series for graduate students of the iSchool (October 2007)
- Teaching Assistant for two sections (83 students) of the MLIS course 'FIS 1210H-Information and its Social Contexts' (Fall 2007)
- Four workshops on 'Accessible Web Design' under the Inforum Workshop Series for graduate students of the iSchool (October 2006 & January 2007)

# Institute for Development & Research in Banking Technology (IDRBT), India (2003 – 2004) Teaching faculty

- Designed and developed curriculum for a two-semester flagship course on Banking Technology Management in a one-year *Post Graduate Program in Banking Technology Management*.
- Taught the above course to the first cohort of 30 students (engineers and MBAs.)

# Reserve Bank Staff College (RBSC), India (1998 - 2003)

Teaching Faculty

- RBSC is the Corporate Training College of the Reserve Bank of India, imparting training to its officers and executives in banking, management and technology.
- Conducted short-duration training programmes (2 to 3 weeks each) relating to use of Information Technology in banking in the following areas:
  - Operating Systems (UNIX, IBM, Novell Netware, Windows NT/2000)
  - Programming languages (COBOL, 'C', Visual Basic)
  - Information Systems Design, RDBMS (Oracle 9i ) and Front end tools (Developer 2000)
  - Information Security, Networking and Internet Security

### Research

- Founding member of the Canadian Association for Inclusive Design Research (http://www.caidr.ca)
- Featured on the Research Matters blog of the Council of Ontario Universities (**August 2015**) http://yourontarioresearch.ca/team-rm/2014-2015
- Resident researcher at the Inclusive Design Institute (2010 present)
- Associate researcher at SMARTlab, University College Dublin, Ireland (2014 present)
- Principal Investigator, OCAD University Seed Grant research project (2015-2016)
- Principal Investigator, MITACS Globalink Project: Amita Pharshy, India, Dec 2015 Mar 2016
- Principal Investigator, MITACS Globalink Project: Yu Zhang, China, Dec 2015 Mar 2016
- Principal Investigator Taking SickKids Mobile Mitacs Accelerate Cluster project (2014-2015)
- Academic Advisor Taking SickKids Mobile (responsible for six OCADU interns) (2014-2015)
- Postdoctoral Fellow iSchool, University of Toronto (2010-2012)
- Research Assistant Adaptive Technology Resource Centre, University of Toronto (2005–2010)
- Research Assistant Faculty of Information, University of Toronto (2007)
- Ph.D. University of Toronto (2005-2010)
- M.Sc. thesis University College London, UK (2004-2005)
- Lead Researcher Open Source & e-Learning Tech. Research Group, IDRBT, India (2003-2004)
- M.Sc. thesis Indian Institute of Technology, Madras, India (1975–1977)

### Principal Investigator - Mitacs Globalink Award (Dec 2015-Mar 2016)

**Project**: Designing a safe, non-intrusive game for children to potentially detect Child Sexual Abuse

- Awarded \$5000 by Mitacs Inc. for supporting a student, Amita Pharshy from December 2015 to March 2016 for conducting collaborative, cross-cultural research with Jain University, Bangalore, India.

# Principal Investigator – Mitacs Globalink Award (Dec 2015-Mar 2016)

**Project**: A Culturally Inclusive AAC App for Children with Autism in China

- Awarded \$5000 by Mitacs Inc. for supporting a student, Yu Zhang from December 2015 to March 2016 for conducting collaborative, cross-cultural research with Nanjing University, Nanjing, China.

# Principal Investigator - OCAD University Seed Grant research (2015-2016)

**Project:** Online Interaction User Experience of Blind and Visually Impaired Web Users

- Awarded a Research Seed Grant of \$2500 by OCAD University for conducting a one-year research project towards preparing a larger application to SSHRC within two years from the award.

# Principal Investigator – OCAD University (2014-2015)

**Project**: Taking SickKids Mobile - Multipartner Project (SickKids Hospital, OCAD University, Ryerson University, George Brown College, Blackberry, Sapient Inc., Normative, iMason)

- Wrote successful application for Mitacs Accelerate Cluster Award, Canada-\$120,000 for six months.

# Academic Advisor - OCAD University (2014-2015)

Project: Taking SickKids Mobile Project

Responsible for overseeing and advising six OCAD University design interns in the project and ensuring quality and timeliness of deliverables.

# Postdoctoral Fellow – iSchool, University of Toronto (2010–2012)

**Project**: Privateye: Electronic Navigation Aids for Individuals with Visual Impairments

- Funded by Mitacs Elevate Postdoctoral Fellowship, Canada \$140,000 for two years.

# Research Assistant - Adaptive Technology Resource Centre, Univ of Toronto (2005–2010)

**Project**: *Fluid Engage* (January 2010–April 2010)

- Funded by the Andrew-Mellon Foundation, USA; led by ATRC, University of Toronto.

**Project**: CulturAll 2.0 (June 2007–August 2009) Framework for assessing Credibility on the Web

- Funded by the Canadian Culture Online Project (CCOP) of Heritage Canada and led by ATRC, UofT.

**Project**: *CulturAll - Artists as Innovators* (April 2006–March 2007)

- Funded by the Canadian Heritage New Media Network Fund and led by ATRC, University of Toronto.

**Project**: Stretch - Perspectives on Inclusion (September 2005–March 2006)

- Funded by the Canadian Culture Online Project Fund and led by ATRC, University of Toronto.

#### Research Assistant - Faculty of Information, University of Toronto (2007)

**Project**: *The impact of Web 2.0 on credibility indicators in health care*. (March 2007–August 2007)

- Funded by CIHR Interdisciplinary Capacity Enhancement Sub-grant [\$8000].

### Ph.D. Candidate – University of Toronto (2005–2010)

**Thesis title:** Is Hearing Believing? Perception of Online Information Credibility by Screen Reader Users who are Blind or Visually Impaired

- Conducted mixed-method study of everyday information practices of 60 blind residents of Ontario.
- Proposed a model for online information credibility perception process in the context of non-visual Web access by screen reader users.
- Established qualitatively that promoting inclusion in the online participatory culture would enhance the information practices of screen reader users.
- Presented my research in various venues such as <u>ASSETS</u> (2006) <u>OLA</u> (2007) <u>JCDL</u> (2007) <u>AACE e-</u> Learn (2007) <u>CSUN</u> (2007) <u>CSI-AHD</u> (2008) <u>CSUN</u> (2009) <u>IEEE</u> (2009) <u>CAIS</u> (2010) & <u>CDSA</u> (2010).

# M.Sc. thesis research - University College London, UK (2004-2005)

**Thesis title**: Accessibility vs. Usability – where is the dividing line?

- A theoretical analysis of the relationship between Web Accessibility and Usability guidelines resulting in a proposed method for distinction between accessibility and usability guidelines; Hypotheses tested through an experiment with students with visual impairments in London, U.K.

# Lead Researcher – Open Source and e-Learning Technologies Research Group (2003–2004) Institute of Development & Research in Banking Technology (IDRBT), Hyderabad, India

- Headed a team of six researchers that developed a Learning Management System (LMS) for IDRBT based on *Moodle* (Open Source) to replace a popular commercial LMS in use at the institute until then.

#### M.Sc. thesis research - Indian Institute of Technology, Madras, India

**Thesis title**: Electron Spin Resonance spectroscopic study of Gamma-irradiated hydroimidazole crystals.

- A practical study of the generation of free radicals in hydroimidazole crystals through irradiation with Gamma rays and analysis of their properties.

### **Publications & Presentations**

## Papers in refereed conference proceedings

- Graham, G. and Chandrashekar, S. (2016). A Process and Tool for Accessible User Experience Evaluation of Websites and Apps with Screen Reader Users who are Blind. Paper accepted for publication in *Springer Lecture Notes in Computer Science (LNCS)*.
- Zou, H. and Chandrashekar, S. (2016). A Tool for Promoting Financial Inclusion of Novice Investors. Paper accepted for publication in *Springer Lecture Notes in Computer Science (LNCS)*.
- Chandrashekar, S., and Caidi, N. (2010). Online Participation and Information Inclusion—a study of Internet Users with Vision Impairments. Proceedings of the 38th Annual CAIS/ACSI conference 2010. *Canadian Association for Information Science*, 1-5. The submission was voted one of the best three conference abstracts.
- Chandrashekar, S. and Hockema, S. A. (2009). Online access, participation and information credibility assessment. In *Proceedings of the 2009 IEEE Toronto International Conference Science and Technology for Humanity (IEEE-TIC STH 2009), SED 6: Symposium on Education and Social Implications of Technology: Social Implications of Technology 2*, pages 755–760.
- Chandrashekar, S., Witteman, H, O'Grady, L. and Betel, L. (2007). Sense-making and credibility of health information on the social web: A multi-method study accessing tagging and tag clouds. In *Proceedings of the E-Learn 2007 World Conference on E-Learning in Corporate, Government, Healthcare, & Higher Education*, October 15-19, 2007, Quebec City, Canada.
- Chandrashekar, S. and Caidi, N. (2007). A model for Inclusive Design of Digital Libraries. In *Proceedings* of the ACM/IEEE-CS Joint Conference on Digital Libraries (JCDL 2007) June 17-23, 2007 in Vancouver.
- Chandrashekar, S., Stockman, T., Fels, D., and Benedyk, R. (2006). Using think aloud protocol with blind users: a case for inclusive usability evaluation methods. In *Proceedings of the 8th international ACM SIGACCESS Conference on Computers and Accessibility* (Portland, OR, October 23 25, 2006). Assets '06. ACM Press, New York, NY, 251-252.
- Chandrashekar, S. and Benedyk, R. (2006). Accessibility vs. Usability where is the dividing line? *Contemporary Ergonomics 2006*, Editor Philip D Bust (publication of the Ergonomic Society Annual Conference, April 1-4, 2006) Taylor & Francis Ltd: London, U.K., 231-235.

### Papers in refereed journals

- Chandrashekar, S., Caidi, N. & Hockema. S. (In preparation). "Is Hearing Believing? A Process model for online credibility perception by screen readers with visual impairments." Prepared for JASIST (35 pages.)
- Chandrashekar, S. & Caidi, N. (In preparation). "Treading Invisible Waters: The Screen Reader in the Online Information Experiences of Visually-Impaired Users" Prepared for Journal of Documentation (30 pages.)

- Chandrashekar, S. & Treviranus, J. (In preparation). "Can they afford to miss these? How Screen Reader Users Adapt to Inaccessible Visual Affordances on the Internet" Prepared for Universal Access in the Information Society (12 pages.)
- Thankappan, S. & Chandrashekar, S. (In preparation). "Oh Doctor, I'm in Trouble: Helping AAC Users Communicate Better in Medical Emergencies and Hospital ICUs." Prepared for Journal Augmentative and Alternative Communication (12 pages).
- Chandrashekar, S. and Kotian, H. (2007). CAPTCHA a case for accessible design of information security systems. Computer Society of India's *CSI Communication*, Special issue on Information Security. August 2007, pages 35–42.

# **Magazine articles**

- Hockema, S. & Chandrashekar, S. (Fall 2008). Credibility 2.0 Providing context and community on the Social Web. Abilities Canada's Lifestyle Magazine for People with Disabilities. Issue 76, page 40.
- Chandrashekar, S. & Levinson, L. (Spring 2006). Stretching Creativity Inspiring Students to Create Accessible Art. Abilities Canada's Lifestyle Magazine for People with Disabilities. Issue 66, pp. 52-53.

## **Conference presentations**

- Graham, G. and Chandrashekar, S. (2016). A Process and Tool for Accessible User Experience Evaluation of Websites and Apps with Screen Reader Users who are Blind. Accepted for presentation at the *10th International Conference on Universal Access in Human-Computer Interaction*, Toronto, 17-22 July, 2016.
- Zou, H. and Chandrashekar, S. (2016). A Tool for Promoting Financial Inclusion of Novice Investors. Accepted for presentation at the *10th International Conference on Universal Access in Human-Computer Interaction*, Toronto, July 17-22, 2016.
- Thankappan, S. & Chandrashekar, S. (2016). Bringing hospital staff and non-verbal patients closer with AAC during medical emergencies. Paper accepted for presentation at the ISAAC (International Society for Augmentative and Alternative Communication) Conference, 2016, Toronto, August 6-13, 2016.
- Poster "Enhancing Mobility for the blind the International Mobility Challenge" at the MITACS Research Showcase event in Toronto on September 28, 2011.
- Paper "Framework to Support Online Credibility Evaluation by Web Users with Vision Loss" at the *24th Annual International Technology and Persons with Disabilities Conference (CSUN 2009)*, Los Angeles, CA, March 18-23, 2009.
- Paper "Equality through e-Quality: Importance of Technology and Accessibility for the Creation of an Equalizing Environment" at the *National Conference on Disability and Disenchantment: New challenges and Evolving directions* on March 3, 2009 in New Delhi, India.
- Paper "Bridging the Disability Divide: Facilitating use of ICTs by People who are Blind", at the *National Conference on Information and Communication Technologies (ICT) for Differently-abled People* on September 20, 2008 in Ahmedabad, India.
- Doctoral research proposal on "Perception of Information Credibility by Blind Digital Library Users" at the Doctoral Consortium of the *ACM/IEEE-CS Joint Conference on Digital Libraries (JCDL 2007)* on June 18, 2007 in Vancouver.

- Short paper on "A model for Inclusive Design of Digital Libraries" at the *ACM/IEEE-CS Joint Conference* on Digital Libraries (JCDL 2007) on June 20, 2007 in Vancouver.
- Case study "Techpreneurship of a blind Indian Computer Programmer" at the *22nd Annual International Technology and Persons with Disabilities Conference (CSUN)*, Los Angeles on March 23, 2007.
- Young Researchers' Consortium presentation on "Assisting Vision impaired Persons in evaluating Information Credibility on the Web" at the 22nd Annual International Technology and Persons with Disabilities Conference (CSUN), Los Angeles on March 23, 2007.
- Co-presentation with Anne Dorsey, Librarian, Barrie Public Library, on "Serving Library Patrons with Developmental Disabilities" at the *Super Conference of the Ontario Library Association (Super OLA 2007)* on February 1, 2007.
- Poster on "Using Think-Aloud Protocol with blind users: a case for Inclusive Usability Evaluation Methods" at the *Eighth International ACM-SIGACCESS Conference on Computers and Accessibility (ASSETS 2006)* in Portland (OR) on October 23, 2006.
- Talk on "Web accessibility" to the Public Affairs and Technology groups of CHUM TV at their office in Toronto on June 15, 2006.
- Talk on "Accessible websites" on April 27, 2006 at the Canadian National Institute for the Blind on Web Accessibility at a workshop organized by the Media Access and Participation Initiative (MAP), Toronto, a collaboration between Broadcasters, Disability organizations, and Ministry of Community and Social Services, Government of Ontario.

## Conferences/workshops attended (besides those at which presented):

- "Digital Odyssey 2008: Accessibility and Technology in Libraries" Workshop organized by the Ontario Library Information Technology Association (OLITA) on June 6, 2008 in Toronto.
- Supporting Human Diversity Through Inclusive Design", an International Open Forum on eLearning and Standardization held in Toronto on September 13<sup>th</sup> and 14<sup>th</sup> 2007 hosted by the Adaptive Technology Resource Centre in partnership with the E-Learning Standards Advisory Council of Canada, ISO/IEC JTCI/SC36 and the Standards Council of Canada.
- ASIS&T 2007, the "American Society for Information Science & Technology Annual Conference" in Milwaukee, WI, October 19-24, 2007.
- CanWAPSS 2008, the 5<sup>th</sup> Annual Conference Breaking Down Barriers Defining Success in Toronto, Canada, April 5, 2008.
- CDSSA 2008 "Critical Disability Studies Graduate Student Conference", York University, Toronto, Canada, May 2-3, 2008.
- ICCHP 2006 "International Conference on Computers Helping People with Special Needs", Linz, Austria, July 10-14, 2006 (as student volunteer).

# **Research Fund Raising**

**November 2015:** As Principal Investigator, obtained \$5,000 funding under the **Mitacs Globalink program** for funding student research in Nanjing University, Nanjing, China from Dec 2015 to Mar 2016.

**November 2015**: As Principal Investigator, obtained \$5,000 funding under the **Mitacs Globalink program** for funding student research in Jain University, Bangalore, India from Dec 2015 to Mar 2016.

- **June 2015**: As Principal Investigator, obtained a Research Seed Grant of \$2,500 from OCAD University for conducting a one-year research project towards preparing a larger application to SSHRC within two years from the award.
- October 2014: As Principal Investigator, obtained \$120,000 funding under the Mitacs Accelerate Cluster program for a multi-partner project 'Taking SickKids Mobile' to develop six mobile app solutions for the SickKids Hospital between November 2014 and February 2015. The project includes six student interns from OCAD University, three student interns from Ryerson University, six business analysts from George Brown College and four industry partners Sapient, Blackberry, Normative and iMason.
- **2013**—**present**: Guided ten MDID students in planning external research projects related to their Major Research Project, writing funding applications for the **Mitacs Accelerate** and **Mitacs Globalink** programs and successfully completing the projects. Guided one student to win the SSHRC scholarship for the Masters program.

2010: Won a two-year Mitacs Elevate Industrial Postdoctoral Fellowship of \$140,000 for self.

**2005–2008**: Contributed in part to several large multi-partner funding proposals to government bodies such as Canadian Culture Online and Industry Canada, during my employment with ATRC.

## **Disability Support**

### **Honorary**

- Worked with the WCAG (Web Content Accessibility Guidelines) Working Group of the World Wide Web Consortium's Web Accessibility Initiative as an outside subject matter expert in Accessibility.
- Evaluated WCAG 2.0 candidate implementation websites as part of the process leading to the publication of the W<sub>3</sub>C's Web Content Accessibility Guidelines 2.0 on December 11, 2008.
- Volunteering with BALANCE For Blind Adults, providing academic research participation opportunities to staff & members, both in my own and in others; assisting in-house counsellors & technology trainers (2007–present)
- Volunteering with the CNIB (Canadian National Institute for the Blind), providing opportunities to staff and members for participation in academic research and assisting their research department in research relating to accessibility of public spaces to persons with visual impairments, notable among them being the one in 2007 about readability of signage at the Union station (2006–present)

#### **Paid**

- Special Tutor to a student with special learning needs in the MDID program at OCAD University (2013–2015)
- Student assistant to a Ph.D. student in Political Science in the University of Toronto who is blind from birth, transforming readings and research materials into electronic format for reading with assistive technologies (2007–2011)

#### **Service**

2014-15	OCAD University Admissions Committee, MDID Program (Committee Member)
	OCAD University Program Committee, MDID Program (Committee Member)
2013-14	OCAD University Admissions Committee, MDID Program (Committee Member)
	OCAD University Program Committee, MDID Program (Committee Member)
2012-13	Contributing faculty, MDID program
2011-12	Contributing faculty, MDID program
2007-09	Treasurer of the iSchool Doctoral Students Association, University of Toronto.

- **2007–09** Committee member of the Students For Barrier-free Access, Accessibility Services Student Advisory Committee Working Group on Alternative Formats.
- **2007–10** Volunteer with BALANCE For Blind Adults.
- **2006–10** Volunteer with the Canadian National Institute for the Blind (CNIB).
- 2006-07 Executive member (Website Committee) of the iSchool Doctoral Students Association, UofT

## **Professional affiliations**

- Founder-member of the Canadian Association for Inclusive Design Research (CAIDR)
- Member of the ACM, ACM SIGCHI and ACM SIGACCESS
- Member of the IEEE, Toronto chapter (2008-2012)
- Member of the American Society for Information Science & Technology (ASIS&T) (2006–2011)
- Member of the Usability Professionals' Association, USA (2004–2006)
- Member of the Ergonomics Society of UK & the British Computer Society (2004–2005)
- Life member/Alumna of the National Centre for Software Technology, India
- Life member/Associate of the Indian Institute of Banking and Finance

# Legacy technology skills

#### I.T. Project Management

Worked in the roles of IT project manager / system designer / programmer in the following projects:

- SCO-UNIX BANKNET WAN Project-managed the implementing the Madras node of the RBI's nation-wide Electronic Funds Transfer system
- HP-UNIX X.25 BANKNET wide area network Co-ordinated the implementation of the Madras node of the nation-wide BANKNET Communication network
- IBM mainframe JCL VS COBOL Systems programmer Computerised Cheque Processing and Clearing Service at the National Clearing Cell (NCC), Madras
- UNIX operating system MF COBOL Project-managed the implementation of Funds Accounting system at the Department of Expenditure & Budgetary Control in Bombay
- $\ UNIX \ operating \ system UNIFY \ RDBMS \ and \ C \ language Co-ordinated \ the \ testing \ and \ roll-out \ of \ Payroll \ Package \ for \ the \ RBI's \ office \ at \ Bangalore$
- WIPRO-DOS operating system SQL and COBOL Systems analyst and programmer at the Department of Banking Operations and Development at RBI, Bombay

#### Certification

- Redhat Linux 9.0 certification Redhat India Ltd., Hyderabad, India
- Lotus Notes 4.6 Development certification Cybernet Education, Madras, India
- Certificate in 'C' language National Centre for Software Technology, Mumbai, India
- Certificate Course in Software Technology National Centre for Software Technology India
- Diploma in French Alliance Français de Bombay, India
- Certified Associate Indian Institute of Banking and Finance, Mumbai, India

#### Language skills

- Native to working level proficiency in ten Indo-Iranian and Dravidian languages: oral and written fluency in Hindi, Tamil, Telugu and Marathi; oral fluency in Malayalam, Kannada, Bengali, Punjabi, and Urdu; academic proficiency in Sanskrit

- Diploma in French from Alliance Français de Bombay, India
- Mandarin language course (level I) from University College London (U.K.)
- Proficiency in Braille typing and visual recognition of Braille letters