Venkatesh Choppella

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INTERESTS
: Software Architectures, Web technologies, Programming Languages, Formal specification and verification of systems, Computer Science Education

EDUCATION

Indiana University, Bloomington, Indiana, USA

Ph.D. in Computer Science, Aug 2002
- Dissertation: "Unification Source-tracking with Application to Diagnosis of Type Inference"
- Advisor: Christopher T. Haynes

M.S., Computer Science, May 1995,

Indian Institute of Technology, Madras, Chennai, India

M.Tech., Computer Science and Engineering, May, 1987
- Dissertation: "Implementation of ML using the SECD machine"
- Advisor: C. R. Muthukrishnan

Indian Institute of Technology, Kanpur, Kanpur, India

B.Tech., Computer Science and Engineering, May, 1985.

EMPLOYMENT

Position		Start			End	
Associate Professor, IIIT Hyderabad	**Jan**	**2010**	**-**			
Visiting Associate Professor, IIIT Hyderabad	**Jul**	**2009**	**-**	**Dec**	**2009**	
Visiting Associate Professor, IIIT Bangalore	**Jul**	**2009**	**-**	**Apr**	**2010**	
Visiting Research Associate, Ohio State University	**May**	**2005**	**-**	**May**	**2006**	
Associate Professor, Indian Inst. of Info. Tech.& Mgmt Kerala	**Oct**	**2003**	**-**			
Adjunct Faculty, Tata Consultancy Services	**Nov**	**2003**	**-**	**Nov**	**2005**	
Post-Doctoral Researcher, Oak Ridge National Laboratory	**Dec**	**2002**	**-**	**Sep**	**2003**	
PhD. Candidate, Indiana University	**Sep**	**2001**	**-**	**Jul**	**2002**	
Senior Software Engineer, Hewlett-Packard Company	**Jan**	**2001**	**-**	**Aug**	**2001**	
Research Staff, Indiana University	**Mar**	**2000**	**-**	**Dec**	**2000**	
Senior S/W Engineer, Xerox Corporation	**Sep**	**1999**	**-**	**Feb**	**2000**	
PhD. Candidate, Indiana University	**Jan**	**1999**	**-**	**Sep**	**1999**	

EMPLOYMENT CONTD.	*Research Staff*, Derivation Systems	**Jun**	**1995**	**-**	**May**	**1997**
	Research/Teaching Associate Indiana University	**Aug**	**1988**	**-**	**Jan**	**1995**
	S/W Engineer CMC Ltd	**Mar**	**1987**	**-**	**Aug**	**1988**

TEACHING EXPERIENCE

Institutes of Information Technology, Trivandrum, Bangalore and Hyderabad
Associate Professor   **Oct 2003 - present**
Designing and teaching the following courses in computer science and information technology.

- Principles of Programming Languages, 2009, 2010
- Principles of Programming 2007, 2008, 2009
- Web Technologies 2003, 2004, 2006, 2007, 2008
- Interpreters and Compilers 2004.
- Mathematical Foundations of Information Technology 2004.
- Introduction to Databases 2005, 2006
- Data Structures 2009
- Computer Networks 2008 (Associate Instructor)
- Scientific Computing 2006 (Associate Instructor)
- Computational Biology 2007 (Co-Instructor)

Indiana University Computer Science, Bloomington, Indiana, USA
Associate Instructor   **Jan 1990 - Jan 1995**
Graded assignments, conducted discussions, and shared lecturing responsibilities for the following courses:

- Introduction to Programming with C and Scheme
- Introduction to Data Structures
- Introduction to Algorithms
- Introduction to Programming Languages
- Semantics of Programming Languages

REFEREED WORKSHOP AND CONFERENCE PUBLICATIONS

Thulasi Ram Naidu P., Manisha Verma, Venkatesh Choppella and Gangadhar Chalapaka. **Synthesizing Learning Environments**. Submitted to the 2nd International Conference on Technology for Education, Mumbai, pp 124-132. Jul 2010.

T B Dinesh and Venkatesh Choppella. **A case for process-driven models for e-governance architectures**. 7th International Conference on E-Governance. 22 - 24 Apr 2010. Bangalore, India.

Venkatesh Choppella and K R Srivathsan. **Fostering Community Interaction with the Trivandrum City Police Portal.** 3rd ACM International Conference on the Theory and Practice of E-Governance, Bogota, Colombia, pp 365–368, Nov 2009.

REFEREED
WORKSHOP AND
CONFERENCE
PUBLICATIONS
CONTD.

V. Choppella, A. Sengupta, E. L. Robertson and S. D. Johnson. **Preliminary Explorations in Specifying and Validating Entity-Relationship Models in PVS.** Proceedings of AFM 07, ACM Workshop on Applied Formal Methods, Nov. 6th, 2007, Atlanta, USA. Preprint available at http://fm.csl.sri.com/AFM07/afm07-preprint.pdf.

Albert Hartono, Qingda Lu, Xiaoyang Gao, Sriram Krishnamoorthy, Marcel Nooijen, Gerald Baumgartner, Venkatesh Choppella, David Bernholdt, Russell Pitzer, J. Ramanujam, Atanas Rountev, and P. Sadayappan. **Identifying Cost-Effective Common Subexpressions to Reduce Operation Count in Tensor Contraction Evaluations.** International Conference on Computational Science (ICCS'06), LNCS 3991, pages 267-275, May 2006. Copyright 2006 Springer-Verlag.

S. Krishnan, S. Krishnamoorthy, G. Baumgartner, C-C. Lam, J. Ramanujam, P. Sadayappan and V. Choppella. **Efficient Synthesis of Out-of-core Algorithms Using a Nonlinear Optimization Solver.** In *Proc. International Parallel and Distributed Processing Symposium, Albuquerque, New Mexico, USA, Apr 2004.* (Proceedings available on CD-ROM). IEEE Computer Society.

A. Bibireata, S. Krishnan, G. Baumgartner, D. Cociorva, C-C. Lam, P. Sadayappan, J. Ramanujam, D. E. Bernholdt and V. Choppella. **Memory-constrained Data Locality Optimizations for Tensor Contractions.** In *Proc. 16th International Workshop on Languages and Compilers for Parallel Computing (LCPC '03), College Station, Texas, Oct 2003.* Springer Lecture Notes in Computer Science Vol. 2958, pp. 93–108, 2004.

V. Choppella. **Polymorphic Type Reconstruction Using Type Equations.** In *Implementation of Functional Languages 15th International Workshop, IFL 2003, Edinburgh, UK, Sep 2003 Revised Papers.* Springer Lecture Notes in Computer Science, Vol. 3145, pp. 53–68, 2004.

S. Krishnan, S. Krishnamoorthy, G. Baumgartner, D. Cociorva, C. Lam, P. Sadayappan, J. Ramanujam, D. E. Bernholdt, and V. Choppella. **Data Locality Optimization for Synthesis of Efficient Out-of-Core Algorithms**. In *Proc. of the Intl. Conf. on High Performance Computing, Hyderabad, India, Dec 2003.* Springer Lecture Notes in Computer Science, Vol. 2913 pp. 406–417, 2003.

V. Choppella and C. T. Haynes. **Source-tracking Unification**. In *Proceedings of 19th International Conference on Automated Deduction, (CADE-19), Miami Beach, USA, Aug 2003* Springer Lecture Notes in Artificial Intelligence, Vol. 2741, pp. 458–472, 2003.

M. Govindaraju, A. Slomenski, V. Choppella, R. Bramley and D. Gannon. **Requirements for and Evaluation of RMI Protocols for Scientific Computing**. In *Proc. of the IEEE/ACM conference on SuperComputing (SC 2000), Nov 2000.*

B. Bose. M. Esen Tuna, and V. Choppella. **Tutorial on Digital Design Derivation with DRS**. In *Proc. 1st International Conf. on Formal Methods in Computer Aided Design, (FMCAD '96), Palo Alto, CA, USA, Nov 1996*, Springer Lecture Notes in Computer Science, Vol 1166, 1996.

REFEREED
JOURNAL
PUBLICATIONS

P. Bradford, V. Choppella, and G. J. E. Rawlins. **Lower Bounds on the Matrix Chain Order problem: Extended Abstract**. In *Proc. 2nd Latin American Symposium on Theoretical Informatics, (LATIN'95), Valparaiso, Apr 1995*. Springer Verlag Lecture Notes in Computer Science Vol. 911, 1995.

S. Krishnan, S. Krishnamoorthy, G. Baumgartner, C-C. Lam, J. Ramanujam, P. Sadayappan and V. Choppella. **Efficient Synthesis of Out-of-core Algorithms Using a Nonlinear Optimization Solver (Revised and Extended Version).** *Journal of Parallel and Distributed Computing* Vol. 66. pp. 659-673, May 2006. **Invited submission**.

Alexander A. Auer, Gerald Baumgartner, David E. Bernholdt, Alina Bibireata, Venkatesh Choppella, Daniel Cociorva, Xiaoyang Gao, Robert Harrison, Sriram Krishnamoorthy, Sandhya Krishnan, Chi-Chung Lam, Qingda Lu, Marcel Nooijen, Russell Pitzer, J. Ramanujam, P. Sadayappan and Alexander Sibiryakov. **Automatic code generation for many-body electronic structure methods: the tensor contraction engine**. *Molecular Physics.* Vol. 104, No. 2, pp. 211-228, January 2006.

V. Choppella and C.T. Haynes. **Source-tracking Unification (Revised and Extended Version)**. *Information and Computation* Vol. 201 Issue 2, pp. 121-159, Sep 2005. **Invited submission**.

G. Baumgartner, A. Auer, D. Bernholdt, A. Bibireata, V. Choppella, D. Cociorva, X. Gao, R. Harrison, S. Hirata, S. Krishnamoorthy, S. Krishnan, C. Lam, M. Nooijen, R. Pitzer, J. Ramanujam, P. Sadayappan, A. Sibiryakov. **Synthesis of High Performance Parallel Programs for a Class of ab initio Quantum Chemistry Models**. *Proceedings of the IEEE: Special Issue on Domain-Specific Program Generation and Optimization*, Vol. 93, No. 2, pp. 276–292, February 2005. **Invited submission**.

K. Rath, V. Choppella and S. D. Johnson. **Decomposition of Sequential Behavior using Interface Specification and Complementation**. In *VLSI Design, Special Issue on Decomposition*, Vol. 3, Nos. 3-4, pp. 347–358, 1995.

BOOKS IN
PREPARATION

An Introduction to the Principles of Programming. With T B Dinesh.

TECHNICAL REPORTS	V. Choppella, A. Sengupta, E. L. Robertson, S. D. Johnson. Constructing and Validating Entity-Relationship Data Models in the PVS Specification Language: A case study using a text-book example. Indiana University Computer Science Technical Report TR632. April 2006.
	V. Choppella. A Compositionality Principle for Syntactic Unification. July 2004. *Unpublished manuscript*.
	Venkatesh Choppella. Unification Source-tracking with Application to Diagnosis of Type Inference. (PhD. dissertation) *Indiana University Computer Science Tech. Report. #566, Aug 2002*.
	A. Banerji, C. Bartolino, D. Beringer, V. Choppella, K. Govindarajan, A. Karp, H. Kuno, M. Lemon, G. Pogossiants, S. Sharma, S. Williams. Web Services Conversation Language (WSCL) 1.0 Hewlett-Packard Company, *World Wide Web Consortium Note, Mar 2002*. http://www.w3.org/TR/wscl10
	B. Bose, M. Esen Tuna, V. Choppella. Derivational Reasoning System: A Digital Design Derivation System for Hardware Synthesis. *Contract NAS1-20414 National Aeronautics and Space Administration (NASA) SBIR Phase II Final Report, Mar 1997*.
	V. Choppella and C. T. Haynes. Diagnosis of Ill-Typed Programs, *Indiana University Tech. Report. #426, Dec 1994*.
	Venkatesh Choppella. Implementation of ML using the SECD machine. M.Tech thesis IIT Madras. 1987.
THESIS SUPERVISION	*Automatic generation and deployment of Network Configuration scripts*. Gangadhar Chalapaka. Post-Graduate Diploma in Information Technology (PGDIT), IIITM-K 2009 (Expected).
	Rebuilding the Institute Network. V. Asha Rose, Girish N Gopal, Mithu Mary Kuruvilla. MSIT, IIITM-K 2008.
	Building Instructional Technologies and Content for the Course Principles of Programming Course. Girish N Gopal, Mithu Mary Kuruvilla. MSIT, IIITM-K 2008.
	Automatic Generation of Formal Specification of Entity-Relationship Diagrams. Alice Joseph. M.Tech Vellore Institute of Technology 2008. External Supervisor.
	Modeling Point Mutations in E-Coli Gene and their effect on fitness over successive generations. Nithya Sam and Vimi Soman. Masters in Information Technology (MSIT), IIITM-K 2007.
	IT support for Palliative Care services with an e-learning platform and an electronic health record. Cibi Chacko, K. Rejoy Bhaskar, V. R. Lekshmi and I. Subha. MSIT, IIITM-K 2007.
	Detecting system-breakins by comparing correlated frequency matrices. Anju Pratap. M.Tech. Computer Science, Alagappa University 2007. External Supervisor.

THESIS SUPERVISION CONTD.	*Police Portal for Community Interaction: General Category Manipulation and Alert System*. Jeena Premkumar. Post Graduate Diploma in Information Technology (PGDIT), IIITM-K 2005.
	Formal Specification of Police Portal's Complaint Module using Z and OCL. Sangram Jena and Manish Garg. PGDIT, IIITM-K 2005.
	Web Services for Agricultural Marketing System. K. M. Manu Prathab and P. Roopiga. MSc Computer Science, Kerala University 2004.
	Implementation of Efficient Algorithms for Unification Debugging. M. T. Chitra and V. G. Suman. MSc. Computer Science, Kerala University 2004.
Workshops and Tutorials conducted	Introduction to Aspect-Oriented Design and Programming. **Invited Tutorial**. *Thirteenth International Conference on Advanced Computing and Communications, Coimbatore, India, Dec 14th, 2005*. With Anurag Mendhekar.
	Principles of Programming for Web 2.0. 2 week Summer School at IIIT Hyderabad for college teachers. May 3rd–14th. IIIT Hyderabad. With T B Dinesh.
PATENTS	Cristina Lopes, Gregor Kiczales, John Lamping, Erik Hilsdale, Venkatesh Choppella, and Taher Haveliwala. Aspect-Oriented System Monitoring and Tracing. *U.S. Patent No. 09/357,508*. Filed 1999. Awarded April 2002.
AWARDS	All India Manthan Awards Second Prize in the E-Governance category for coordinating the Trivandrum City Police Portal for Community Interaction www.tvmcitypolice.org, New Delhi, India, 2005.
	Best Paper Award. International Parallel and Distributed Processing Symposium (IPDPS), Albuquerque, New Mexico, USA, 2004.
	Best Paper Award (Systems). Internationl Conference on High Performance Computing (HiPC), Hyderabad, India, 2003.
	DuPont Fellowship, Computer Science Dept., Indiana University, 1988.
	Merit Certificate for performance in the Joint Entrance Examination, IIT Kanpur, 1981.
GRANTS	European Commission. Erasmus Mundus External Cooperation Window. European Research and Educational Collaboration with Asia Project for Academic Mobility 2008-2009. http://www.mrtc.mdh.se/eureca/. Institute Coordinator. 10,000 Euro.
	Govt. of Kerala, Dept. of Information Technology. Centre for Computational Biology. January 2009. Rs. 30 Lakhs. Co-investigator.
	Govt. of Kerala, Dept. of Information Technology. Centre for Computational Chemistry.

January 2009. Rs. 25 Lakhs. Co-investigator.

Govt. of Kerala, Dept. of Information Technology. Innovation Centre for Open Standards in Software Engineering Education. January 2009. Rs. 40 Lakhs. Co-investigator.

GRANTS CONTD.   Ministry of Information Technology, Government of India. Information Security Education and Awareness (ISEA) 2006-2011. Principal Investigator at Participating Institution IIITM-K. Rs. 300,000 per annum.

Government of Kerala. Police Portal for Community Interaction 2004-2005. Rs. 2,900,000. Co-investigator.

CONSULTING   Cognizant Technologies. Chennai, India. December 2007-January 2008.

Satyam Computers. Hyderabad, India. April 2008.

Servelots Infotech. Bangalore, India. Since December 2007

Indian Postal Service. New Delhi, India. May 2009

Terumo Penpol Ltd. Trivandrum, India. December 2008

PROFESSIONAL SERVICE   Programme committee member, 1st International workshop on Web-supported concurrent collaborative work. (WSCCW 2010), Hong Kong. December 2010.

Programme committee member, 4th ACM International Conference on theory and practice of e-governance (ICEGOV 2010), Beijing, China. November 2010.

Reviewer and Examiner, Design and Development of Robot Design Platform and Database Research Platform and Database based Robot Software Development Framework. MS Thesis by Subhash S. IIIT Hyderbad. May 2010

Programme committee member, 11th International Conference on Distributed Computing and Internet Technologies (ICDCIT) February, 2011, Bhubaneswar, India.

Reviewer, Formal Methods in System Design. Springer, 2010.

Programme committee member, 4th India Software Engineering Conference (ISEC) February, 2011, Thiruvananthapuram, India.

Programme committee member, 10th International Conference on Distributed Computing and Internet Technologies (ICDCIT) February, 2010, Bhubaneswar, India.

Programme committee member and reviewer, International Conference on Software Engineering Education and Training (CSEET) Feb 17-19, 2009, Hyderabad, India.

External reviewer for PhD Thesis, Computer Science, Indian Institute of Technology, Bombay, Jan 2009.

Convener, Institute Information Technology and Services Committee, IIITM-K. Mar 2008 -

Jan 2009.

Member, committee appointed by Kerala State IT Mission, Govt. of Kerala, to implement Public Key Infrastructure in state government offices, 2008.

Reviewer, Journal of Parallel and Distributed Computing. Elsevier. Aug 2008.

PROFESSIONAL SERVICE CONTD.	Reviewer, International Journal of Formal Computing. Springer. Aug 2008.

Organizer, Free Map Workshop, IIITM-K, Feb 2008.

Organizer, One day workshop on Pantoto: Building Information Management Systems for Small and Medium Enterprises. IIITM-K, Feb 2008.

Programme and Organizing Committee member, IEEE workshop on Connecting Computer Science to Domains, IIITM-K. Dec 2007.

Convener, Institute Academic Affairs Committee, IIITM-K. Aug 2006 - July 2007.

Moderator, Panel on Computer Science Teaching, National workshop on Technology Enhanced Learning, Trivandrum, Kerala, India. Jan 5th-6th, 2007.

Panelist, Scilab in Science and Engineering Education. Indo-French Workshop on Scilab, IIT Bombay. Mar 8th, 2007.

Organizer, IEEE/CSI Workshop on Community Wireless Networking, Trivandrum, Kerala, India, Dec 1st-2nd, 2006.

Programme Committee member, International Conference on Advanced Computing and Communications (ADCOMM 05), Coimbatore, India, Dec 14-17, 2005.

Programme Committee member, Free Software, Free Society: Three nation conference on Free, Libre and Open Source Software, Trivandrum India, May 2005.

Board Member, SPACE (Society for Promotion of Alternative Computing and Employment), NGO for promoting Free and Open Source Software in Kerala. Since 2004.

Anonymous referee for The Fifth International Conference on Parallel and Distributed Computing, Applications and Technologies (PDCAT 04), 2004.

Acknowledged by the authors of the following books for proof reading, comments and technical assistance:

- G. Springer and D. P. Friedman. Scheme and the Art of Programming. *MIT Press, 1989*.
- D.P. Friedman, M. Wand and C.T. Haynes. Essentials of Programming Languages, 1st Edition *MIT Press, 1991*.
- Raymond Smullyan. Gödel's Incompleteness Theorems. *Oxford University Press, 1992*.
- Jon Barwise and Lawrence S. Moss. Vicious Circles *CSLI Stanford, 1997*.

PROFESSIONAL MEMBERSHIP	Computer Society of India

Indian Association for Research in Computer Science

CITIZENSHIP   Citizen of India

DATE OF BIRTH   Available upon request.

LANGUAGES   English, Hindi, Telugu

REFERENCES   Available upon request.