
SUBRAMANI MANI, MBBS, PhD

Ph: 615-936-2880

Fax: 615-936-1427

subramani.mani@vanderbilt.edu<http://www.dsl-lab.org/>Assistant Professor
Department of Biomedical Informatics
Vanderbilt University
2209 Garland Avenue, 400 EBL
Nashville TN 37232-8340

Education

- **Ph.D (Intelligent Systems with Biomedical Informatics track)** University of Pittsburgh, PA. (Dec 05).
 - **Dissertation Topic**—A Bayesian Local Causal Discovery Framework.
 - **Dissertation Committee**
 - ◇ Professor Gregory Cooper (Adviser)
 - ◇ Professor Bruce Buchanan
 - ◇ Professor Peter Spirtes
 - ◇ Professor Michael Wagner
- **M.S. (Computer Science)** University of South Carolina, Columbia, SC. (Dec 94).
 - **Thesis Topic**—MENTOR: A Bayesian Model For Prediction And Intervention In Mental Retardation (Adviser: Professor Marco Valtorta).
- **Post-graduate Training, Internal Medicine** Medical College Hospital, Trivandrum, India (87 – 90).
- **MBBS** Medical College, Trivandrum, India (Jan 87).

Teaching and research experience

- Assistant Professor, Department of Biomedical Informatics, Vanderbilt University (7/06 – present.)
- Senior Lecturer, Department of Electrical Engineering and Computer Science, University of Wisconsin-Milwaukee (8/03 – 6/06.)
- Teaching Assistant, Introduction to Bioinformatics, Fall semester, 2000.
- Post-doctoral Fellow, Center for Biomedical Informatics, University of Pittsburgh (8/98 – 8/03).

○ Postgraduate Researcher, Department of Information and Computer Science, University of California at Irvine (3/96 – 8/98).

● **Research Topic**—Application And Refinement Of Machine Learning Algorithms To Learn Models From Biomedical Data (Adviser: Professor Michael Pazzani).

○ Research Associate (Voluntary), Department of Computer Science, University of South Carolina, Columbia, SC (7/95 – 2/96).

○ Programmer and Research Analyst, Department of Family & Preventive Medicine, USC School of Medicine, Columbia, SC (9/91 – 8/94 and 1/95 – 6/95).

○ Co-investigator on a project to build a Computer Expert System in Emergency Care Medicine— Electronics Research & Development Center (ER & DC), Govt. of India, Trivandrum (4/90 – 7/91).

○ Senior Research Fellow of the Council of Scientific and Industrial Research (CSIR) in the Department of Cardiology, Medical College, Trivandrum, India (4/89 – 7/91).

● **Research Topic:** Causal Pathways Of Development Of Chronic Rheumatic Carditis From Acute Rheumatic Fever—A Clinical Study (Adviser: Professor C.G. Bahuleyan).

Membership in Professional Societies, Editorial and Review Boards and Program Committees

◇ American Association for Artificial Intelligence (AAAI).

◇ American Medical Informatics Association (AMIA).

◇ American Association for the Advancement of Science (AAAS).

◇ Editorial Board of *Applied Intelligence* Journal.

◇ Editorial Board of *The Open Artificial Intelligence* Journal.

◇ Publications Committee, American Medical Informatics Association, 1998, and 1999.

◇ Reviewer, AMIA Annual Fall Symposium, 1996 to present.

◇ Reviewer, *Artificial Intelligence in Medicine*, 2002 onwards.

◇ Reviewer, MedInfo (World Congress on Medical Informatics), 2001 onwards.

◇ Reviewer, *Machine Learning*, 2007 onwards.

◇ Reviewer, *Journal of Machine Learning Research*, 2008 onwards.

- ◇ Reviewer, *Journal of the American Medical Informatics Association*, 2010 onwards.
- ◇ Program Committee, *Uncertainty in Artificial Intelligence (UAI)*, 2008, 2010.
- ◇ Reviewer, *Challenge Grants (NIH)*, 2009.

Teaching Activities

- ◇ Machine Learning for Biomedicine (Course director), Spring 2008 and 2009.
- ◇ Methodological Foundations of Biomedical Informatics (Guest lecturer), Spring 2008, 2009 and 2010.

Research Program

- ◇ Vanderbilt CTSA PF298 (PI: Mani), 11/09/2009 - 11/08/2010, “Gene Expression Profile of Stable Preterm Infants Undergoing Booster Packed Red Blood Cell (PRBC) Transfusion” (Role: PI).
- ◇ NIH/NHLBI 1 U01 HL101456-01 (PI: Aschner), 04/01/2010 - 03/31/2015, “Improving Prematurity-related Respiratory Outcomes at Vanderbilt (IMPROV)” (Role: Co-Investigator).
- ◇ NIH/NLM 1 R01 LM 010681-01 (PI: Xu), 04/01/2010 - 03/31/2013, “Real-Time Disambiguation of Abbreviations in Clinical Notes” (Role: Co-Investigator).
- ◇ NIH/NCI 1 U01 CA142565-01 (PI: Yankeelov), 12/01/2009 - 11/30/2014, “PET-MRE for Assessing Treatment Response in Breast Cancer Clinical Trials” (Role: Co-Investigator).
- ◇ NIH/NCI 1 R01 CA141307-01 (PI: Xu), 07/01/2009 - 06/30/2013, “An In-silico Method for Epidemiological Studies Using Electronic Medical Records” (Role: Co-Investigator).
- ◇ NIH/NLM 5 R01 LM007995-06 (PI: Miller), 02/01/2004 - 06/14/2010, “MOMENT (Monitoring for Outpatient Medication Effects and New Toxicities) in TIME ” (Role: Co-Investigator).
- ◇ NIH/NLM 2 R46 LM007948-04A1 (PI: Aliferis), 07/15/2008 - 11/01/2008, “Causal Discovery Algorithms for Translational Research with High-Throughput Data” (Role: Co-Investigator).

Honors and Awards

- Finalist, Student Paper Competition, MEDINFO 2004.
- National Library of Medicine post-doctoral fellowship.
- Mellon pre-doctoral fellowship.

- Senior Research Fellowship of the Council of Scientific and Industrial Research (CSIR).
- National Science Talent Search Scholarship, Government of India.
- National Merit Scholarship, Government of India.

Papers and Publications

A. JOURNALS

- Aliferis C, Statnikov A, Tsamardinos I, **Mani S**, Koutsoukos X. “Local causal and Markov blanket induction for causal discovery and feature selection for classification. Part II: Analysis and extensions”. *Journal of Machine Learning Research* 11:235–284, 2010.
- Aliferis C, Statnikov A, Tsamardinos I, **Mani S**, Koutsoukos X. “Local causal and Markov blanket induction for causal discovery and feature selection for classification. Part I: Algorithms and empirical evaluation”. *Journal of Machine Learning Research* 11:171–234, 2010.
- **Subramani Mani**, Marco Valtorta and Suzanne McDermott. “Building Bayesian Network Models in Medicine: The MENTOR Experience”. *Applied Intelligence* 22, 93–108, 2005.
- Michael J. Pazzani, **Subramani Mani** and Rodman Shankle. “Comprehensible Rule Discovery In Medical Databases”. *Methods of Information in Medicine* 40(5), 380–385, 2001.
- **Subramani Mani**, William R. Shankle, Malcolm B. Dick and Michael J. Pazzani. “Two-Stage Machine Learning Model for Guideline Development”. *Artificial Intelligence in Medicine* 16(1), 51-72, 1999.
- **Subramani Mani**, Suzanne McDermott, and Marco Valtorta. “Mentor: A Bayesian Model for Prediction of Mental Retardation in Newborns”. *Research In Developmental Disabilities*. Vol 18, No 5, p303-318, 1997
- Shankle, W.R., **Mani, S.**, Pazzani, M.J., and Smyth, P. “Use of a Computerized Patient Record Database of Normal Aging and Very Mildly Demented Subjects to Compare Classification Accuracies Obtained with Machine Learning Methods and Logistic Regression” *Computing Science and Statistics*, 29(2), 201-209, 1997.
- McDermott, S., Coker, A., **Mani, S.**, Krishnaswami, S., Nagle, R., Barnett-Queen, L. and Wuori, D. “Population based analysis of parent reported behavior problems in children with cerebral palsy”. *Journal of Pediatric Psychology* Vol.21, No.3, pp 447–463, 1996.

□ Suzanne McDermott, **Subramani Mani** and Shanthi Krishnaswami. “Population-based analysis of specific behavior problems associated with children with seizures”. *Journal of Epilepsy*, Vol. 8, No. 2, pp 110–118, 1995.

B. MAJOR CONFERENCES AND WORKSHOPS (PEER REVIEWED)

□ Chen Y and **Mani S**. “Study of Active Learning in the Challenge”. (To be published in the *Proceedings of the World Congress on Computational Intelligence*, Barcelona, Spain in 2010.)

□ Chen Y and **Mani S**. “Active Learning for Unbalanced Data in the Challenge by Considering Multiple Models and Biasing”. (To be published in the *Proceedings of the Thirteenth International Conference on Artificial Intelligence and Statistics*, Sardinia, Italy in 2010.)

□ **Mani S**, Statnikov A and Aliferis C. “Bayesian Algorithms for Causal Data Mining”. *Proceedings of the NIPS workshop on causality*. 6:121–136, 2010.

□ Varol A, **Mani S**, Compton D, Fuchs L and Fuchs D. “Early Prediction of Reading Disability using Machine Learning”. *Proceedings of the AMIA fall symposium*, 467–471, 2009.

□ **Subramani Mani**, Constantin Aliferis, Shanthi Krishnaswami and Theodore Kotchen. “Learning causal and predictive clinical practice guidelines from data”. *Proceedings of MedInfo*, 2007, p850–854, Klaus A. Kuhn, James R. Warren and Tze-Yun Leong (Eds), IOS Press, Washington DC.

□ **Subramani Mani** and Constantin Aliferis. “A Causal Modeling Framework for Generating Clinical Practice Guidelines from Data”. *Lecture Notes in Artificial Intelligence: Artificial Intelligence in Medicine*, AIME 2007, p446–450, Riccardo Bellazzi, Ameen Abu-Hanna and Jim Hunter (Eds), Springer.

□ **Subramani Mani**, Peter Spirtes and Gregory F. Cooper. “A theoretical study of Y structures for causal discovery”. *Proceedings of the Conference on Uncertainty in Artificial Intelligence*, UAI 2006, p314–323, Rina Dechter and Thomas S. Richardson (Eds), AUAI Press, Corvallis, OR.

□ **Subramani Mani** and Gregory F. Cooper. “A Bayesian Local Causal Discovery Algorithm”. *Proceedings of the World Congress on Medical Informatics*, MedInfo 2004, p731–735, M. Fieschi et al. (Eds), IOS Press.

- **Subramani Mani** and Gregory F. Cooper. “BLCD2: A Bayesian Local Causal Discovery Algorithm”. (*Draft Proceedings of the 9th Intelligent Data Analysis in Medicine and Pharmacology workshop, IDAMAP 2004, Stanford University.*)
- **Subramani Mani** and Gregory F. Cooper. “A Simulation Study of Three Related Causal Data Mining Algorithms”. *Proceedings of the International Workshop on Artificial Intelligence and Statistics 2001*, p73–80. Morgan Kaufmann, San Francisco, CA.
- **Subramani Mani** and Gregory F. Cooper. “Causal Discovery from Medical Textual Data”. *Proceedings of the AMIA Annual Fall Symposium, 2000*, p542–546. Hanley and Belfus Publishers, Philadelphia, PA.
- **Subramani Mani**, Malcolm B. Dick, Michael J. Pazzani, Evelyn L. Teng, Daniel Kempler, and I. Maribell Taussig. “Refinement of Neuro-psychological tests for dementia screening in a cross cultural population using Machine Learning”. In W. Horn, Y. Shahr, G. Lindberg, S. Andreassen, J. Wyatt (Eds.), *Lecture Notes in Artificial Intelligence: Artificial Intelligence in Medicine, AIMDM’99*, Vol. 1620, p326-335.
- **Subramani Mani** and Gregory F. Cooper. “A Study in Causal Discovery from Population-Based Infant Birth and Death Records”. *Proceedings of the AMIA Annual Fall Symposium, 1999*, p315–319. Hanley and Belfus Publishers, Philadelphia, PA.
- **Subramani Mani** and Michael J. Pazzani. “Guideline Generation from Data by Induction of Decision Tables Using a Bayesian Network Framework”. *Proceedings of the AMIA Annual Fall Symposium, 1998*, p518–522. Hanley and Belfus Publishers, Philadelphia, PA.
- W.R. Shankle, **Subramani Mani**, Malcolm B. Dick and Michael J. Pazzani. “Simple Models for Estimating Dementia Severity Using Machine Learning” *MedInfo’98: 9th World Congress on Medical Informatics, Seoul, Korea, August 1998.*, proceedings, part 2, p472–476.
- Rodman Shankle, **Subramani Mani**, Michael Pazzani and Padhraic Smyth. “Detecting very early stages of Dementia from normal aging with Machine Learning methods.” In Keravnou, E., Garbay, C., Baud, R., and Wyatt, J., editors, *Lecture Notes in Artificial Intelligence: Artificial Intelligence in Medicine, AIME97, vol 1211, p73–85, Springer, 1997.*
- Michael J. Pazzani, **Subramani Mani**, and W. Rodman Shankle. “Comprehensible Knowledge-Discovery in Databases.” *Nineteenth Annual Conference of the Cognitive Science Society, Proceedings, p596–601, Lawrence Erlbaum Publishers, 1997*

- Michael J. Pazzani, **Subramani Mani**, and W. Rodman Shankle. “Beyond Concise and Colorful: Learning Intelligible Rules” *The Third International Conference on Knowledge Discovery and Data Mining (KDD-97), Proceedings p235–238, AAAI Press, 1997.*
- **Subramani Mani**, Michael Pazzani and John West. “Knowledge Discovery from a Breast Cancer Database.” In Keravnou, E., Garbay, C., Baud, R., and Wyatt, J., editors, *Lecture Notes in Artificial Intelligence: Artificial Intelligence in Medicine, AIME97, vol 1211, p130–133, Springer, 1997.*
- **Subramani Mani**, Suzanne W. McDermott, and Michael J. Pazzani. “Generating Models of Mental Retardation from Data with Machine Learning” *Proceedings IEEE Knowledge and Data Engineering Exchange Workshop (KDEX-97), p114-119, IEEE Computer Society, 1997.*
- **Subramani Mani**, Marco Valtorta and Suzanne McDermott. “MENTOR: A Bayesian Model for Prediction and Intervention in Mental Retardation”. Fifth International Workshop on Artificial Intelligence and Statistics. Jan 1995, Ft. Lauderdale, Florida.

C. BOOK CHAPTERS AND ABSTRACTS

- **Subramani Mani** and Changwon Yoo. “A Simulation Study Of Automated Causal Discovery Of Cellular Metabolism”. Poster, Pacific Symposium On Biocomputing, *Symposium Notes, PSB 2003, p104.*
- **Subramani Mani** and Gregory F. Cooper. “Causal Discovery from Population-Based Infant Birth and Death Records”. Student Abstract, *Proceedings AAAI99, p973, AAAI Press, Menlo Park, CA.*
- Rodman Shankle, **Subramani Mani**, Michael Pazzani and Padhraic Smyth. “Dementia Screening with Machine Learning methods.” In *Intelligent Data Analysis in Medicine and Pharmacology, Eds. Elpida Keravnou, Nada Lavrac and Blaz Zupan, Kluwer Academic Publishers, p149–166, 1997.*
- **Subramani Mani**, Suzanne W. McDermott, and Michael J. Pazzani. “Detecting Mental Retardation in Newborns and Infants: A Machine Learning Approach” *Pediatrics Supplement Vol. 100, No. 3, part 2, p443, September 1997. (Abstract).*
- **Subramani Mani**, William R. Shankle, Michael J. Pazzani, Padhraic Smyth and Malcolm B. Dick. “Differential Diagnosis of Dementia: A Knowledge Discovery and Data Mining (KDD) Approach” *JAMIA supplement p875, 1997. Full paper in extended proceedings (CD ROM).*

□ McDermott, S., Nagle, R., Wuori, D., Barnett-Queen, L., Coker, A. and **Mani, S.** “Behavior Problems in Children with Cerebral Palsy”. *Developmental Medicine and Child Neurology* Vol.35, No.9, Supplement 69, p13, September 1993. (Abstract).

D. TUTORIALS, PRESENTATIONS AND INVITED TALKS

◇ Presentation (Peer reviewed): **Subramani Mani**, Jörn-Hendrik Weitkamp, Constantin F Aliferis, Asli Ozdas, Huseyin Atakan Varol, Qingxia Chen, Randy Carnevale, Steven Steele. “Neonatal Sepsis Prediction with Machine Learning”. Intelligent Data Analysis in Medicine and Pharmacology (IDAMAP) Workshop, Washington DC, 2009.

◇ Invited Talk: **Subramani Mani**. “The Science of Biomedical Informatics.” Medical College, Trivandrum, India, 2008.

◇ Tutorial: **Subramani Mani**. “Causal Discovery from Biomedical Data.” Artificial Intelligence in Medicine Europe (AIME) Conference, Aberdeen, Scotland, 2005.

◇ Invited Talk: **Subramani Mani**. “Causal Discovery from Biomedical Data.” Regional Cancer Center, Trivandrum, India, 2005.

Citizenship

Citizen of India.

Visa Status

US permanent resident.