

# Radu Stefan Niculescu

---

**Contact Information** Siemens Healthcare *Phone:* 610-448-4949  
CAD and Knowledge Solutions *E-mail:* stefan.niculescu@siemens.com  
20 Valley Stream Parkway *Web:* <http://www.cs.cmu.edu/~stefann>  
Malvern, PA 19355

**Citizenship** Romanian

**Status in US** Permanent Resident (Greencard holder)

## Work Experience

**Siemens Healthcare** **Since Aug 2005**  
***Project Manager / Senior Staff Scientist*** **Knowledge Solutions group**

- Project / Product Manager for an Integrated Development Environment for a medical data mining language product. Responsibilities include: interaction with internal customers, user requirements gathering, risk management, and supervising the requirements implementation.
- Development of data mining methods (Bayesian Networks, Decision Trees, Neural Networks, Support Vector Machines, NLP) for medical problems.

**Carnegie Mellon University** **2000 – 2005**  
***Teaching Assistant, PhD Student***

- Taught Data Structures and Advanced Algorithms
- Helped coach William Lowell Putnam contest team in Fall 2000

**Siemens Medical Solutions** **Summer 2003, 2004**  
***Intern***

- Implemented Bayesian data miner for large unstructured medical records

**Siemens Corporate Research** **Summer 2001, 2002**  
***Intern***

- Modeling Cancer evolution using Bayesian models
- Clinical and financial outcomes analysis of existing hospital patient records

**Education** **Carnegie Mellon University**, Pittsburgh, PA, USA **2000 – 2005**  
***Philosophy Doctor in Computer Science***

- Research in Machine Learning / Data Mining
- Advisor: Professor Tom Mitchell

**Carnegie Mellon University**, Pittsburgh, PA, USA **2000 – 2003**  
***Master of Science in Computer Science***

- Research in Machine Learning / Data Mining

**Bucharest University**, Bucharest, Romania  
*Bachelor of Science, Department of Math / Computer Science*

**1996 – 2000**

- Major in both Mathematics and Computer Science
- Graduated with a GPA of 10 out of 10
- Best of Class of 2000

## **Publications - Journals**

“Modeling fMRI Data Generated by Overlapping Cognitive Processes with Unknown Onsets using Hidden Process Models” (with Rebecca Hutchinson, Timothy Keller, Indrayana Rustandi and Tom Mitchell), *NeuroImage* 2009 (to appear).

“Bayesian Network Learning with Parameter Constraints” (with Tom Mitchell and Bharat Rao), *Journal of Machine Learning Research* 7(Jul):1357-1383, 2006.

“Data Mining for Improved Cardiac Care” (with Bharat Rao and Sriram Krishnan), *SIGKDD Explorations* 8(1):3-10, 2006.

“Solitaire Army and Related Games” (with Florentina Rodica Niculescu), *Mathematical Reports* 8(58), 2(2006):197-217.

“Undirected Extensions of P-Graphs” (with Florentina Rodica Niculescu), *Spiru Haret Mathematical Reports* 2(2006):89-107.

“Learning to Decode Cognitive States from Brain Images” (with Tom Mitchell, Rebecca Hutchinson, Marcel Just, Sharlene Newman, Francisco Pereira, Xuerui Wang), *Machine Learning Journal* 57, 1-2(2004):145-175.

“Some results on the Collatz problem” (with Manfred Kudlek and Stefan Andrei), *Acta Informatica* 37, 2(2000):145-160.

“A problem of minimum in Graph Theory” (with Marius Florin Niculescu), *Mathematical Reports*, Vol. 2(52), 3(2000):337-343.

“On the convergence of a sequence”, *Mathematical Gazette* 2(2000):139-142, Publishing House of the Romanian Society of Mathematical Sciences.

## **Publications - Conferences**

"Block-Suffix Shifting: Fast, Simultaneous Medical Concept Set Identification in Large Medical Record Corpora" (with Ying Liu, Lucian Lita, Prasenjit Mitra and Lee Giles), *Proceedings of AMIA* 2008.

"Okinet: Automatic Extraction of a Medical Ontology From Wikipedia" (with Vasco Pedro, Lucian Lita, Bharat Rao and Jaime Carbonell), *Proceedings of WIKIAI at AAAI* 2008.

"Real-Time Data Pre-Processing Technique for Efficient Feature Extraction in Large Scale Datasets" (with Ying Liu, Lucian Lita, Kun Bai, Prasenjit Mitra and Lee Giles), Proceedings of CIKM 2008.

"Large Scale Code Classification for Medical Patient Records" (with Lucian Lita, Shipeng Yu, Jinbo Bi), Proceedings of the International Joint Conference on Natural Language Processing (IJCNLP) 2008.

"Finding a Haystack in Haystacks - Simultaneous Identification of Concepts in Large Bio-Medical Corpora" (with Ying Liu, Lucian Lita, Prasenjit Mitra and Lee Giles), Proceedings of SIAM Data Mining 2008.

"Principled Generative-Discriminative Hybrid Hidden Markov Model" (with Oksana Yakhnenko, Lucian Lita, Romer Rosales), NIPS workshop on Representations and Inference on Probability Distributions, December 2007.

"A Theoretical Framework for Learning Bayesian Network with Parameter Inequality Constraints" (with Tom Mitchell and Bharat Rao), Proceedings of IJCAI 2007.

"Automatic Medical Coding of Patient Records via Weighted Ridge Regression" (with Jianwu Xu, Shipeng Yu, Jinbo Bi, Lucian Lita, Bharat Rao), Proceedings of the International Conference on Machine Learning and Applications (ICMLA) 2007.

"Modeling the fMRI Signal via Hierarchical Clustered Hidden Process Models" (with Tom Mitchell and Bharat Rao), Proceedings of AMIA 2007.

"Federated Ontology Search for the Medical Domain" (with Vasco Pedro, Lucian Lita, Jaime Carbonell, Bharat Rao), Proceedings of OntoContent 2007.

"Automated fMRI Feature Abstraction using Neural Network Clustering Techniques" (with Tom Mitchell), NIPS workshop on New Directions on Decoding Mental States from fMRI Data, Vancouver, December 2006.

"Exploiting Parameter Related Domain Knowledge for Learning in Graphical Models" (with Tom Mitchell, Bharat Rao), Proceedings of SIAM Data Mining 2005:310-321.

"Clinical and Financial Outcomes Analysis with Existing Hospital Patient Records" (with Bharat Rao, Sathyakama Sandilya, Colin Germond, Harsha Rao), Proceedings of KDD 2003:416-425.

"Classifying Instantaneous Cognitive States from fMRI Data" (with Tom Mitchell, Rebecca Hutchinson, Marcel Just, Sharlene Newman, Francisco Pereira, Xuerui Wang), Proceedings of AMIA 2003:465-469. **Best Paper Award.**

"Evaluating the C-section Rate of Different Physician Practices: Using Machine Learning to Model Standard Practice" (with Rich Caruana, Bharat Rao, Cynthia Simms), Proceedings of AMIA 2003:135-139. **Nominated for Best Paper Award.**

"Machine Learning of fMRI Virtual Sensors of Cognitive States" (with Tom Mitchell, Rebecca Hutchinson, Marcel Just, Sharlene Newman, Francisco Pereira, Xuerui

Wang), NIPS workshop on Foundations and Modeling in Neuroimaging, Vancouver, December 2002.

“Mining Time-dependent Patient Outcomes from Hospital Patient Records” (with R. Bharat Rao, Sathyakama Sandilya, Colin Germond, A. Goel), Proceedings of AMIA 2002:126-130. **Nominated for Best Paper and Warner Awards.**

“Machine Learning for Sub-Population Assessment: Evaluating the C-section Rate of Different Physician Practices” (with Rich Caruana, Bharat Rao, Cynthia Simms), Proceedings of AMIA 2002:126-130.

## Patents

“System and Method for Large Scale Code Classification for Medical Patient Records” (with Lucian Lita, Jinbo Bi, Shipeng Yu, Bharat Rao), filed in 2008.

“Contextual Searching of Electronic Records and Visual Rule Construction” (with Lucian Lita, Maleeha Qazi, Gilberto Matos), filed in 2008.

“System and Method for Text Tagging and Segmentation Using a Generative/Discriminative Hybrid Hidden Markov Model” (with Oksana Yakhnenko, Lucian Lita, Romer Rosales), filed in 2008.

“System and Method for Creating and Searching Medical Ontologies” (with Vasco Pedro, Lucian Lita, Bharat Rao), filed in 2008.

“Medical Entity Extraction from Patient Data” (with Lucian Lita, Ciprian Raileanu, Bharat Rao), filed in 2008.

“Data De-identification by Obfuscation” (with Romer Rosales, William Landi, Sriram Krishnan, Bharat Rao, Phan Giang), filed in 2008.

“Automated Interpretation and Replacement of Date References in Unstructured Text” (with Romer Rosales, Meliha Yetisgen Yildiz, Bharat Rao, Sriram Krishnan), filed in 2008.

“Patient Data Mining for Diagnosis and Projections of Patient States” (with Bharat Rao, Sathyakama Sandilya, Arun Goel), Granted in 2007.

“Quality Metric Extraction and Editing for Medical Data” (with Bharat Rao, Sriram Krishnan, William Landi, Romer Rosales, Farbod Rahmanian, Harald Steck), filed in 2007.

“Systems and Methods for Automated Extraction and Processing of Billing Information in Patient Records” (with Bharat Rao, Sathyakama Sandilya), filed in 2002.

“Patient Data Mining for Automated Compliance” (with Bharat Rao, Sathyakama Sandilya, Thomas Warrick, Harm Scherpier), filed in 2002.

“Patient Data Mining, Presentation, Exploration, and Verification” (with Bharat Rao, Sathyakama Sandilya, Berenbach Brian, Arun Goel), filed in 2002.

“Patient Data Mining” (with Bharat Rao, Sathyakama Sandilya, Christopher Amies, Arun Goel, Thomas Warrick), filed in 2001.

Additional 19 invention disclosures with Siemens Medical Solutions (until Oct 2008)

## **Posters, Abstracts, Demos, Theses**

“Mining Medical Records for Computer Aided Diagnosis” (with Bharat Rao, Romer Rosales, Sriram Krishnan, Luca Bogoni, Xiang Zhou, Balaji Krishnapuram), Demo in KDD conference, Philadelphia, PA, 2006.

“Automated Chart Abstraction Can Provide Highly Accurate Data Extraction For Clinical Quality Measures: Assessment of REMIND for CMS Heart Failure Measures” (with Trish Wilmes, Kim Bohy, Alexis Gilson, Sriram Krishnan, Romer Rosales, Maleeha Qazi, Farbod Rahmanian, William Landi, Bharat Rao), American Heart Association Conference 2006.

“Use of REMIND Artificial Intelligence Software for Rapid Assessment of Adherence to Disease Specific Management Guidelines in Acute Coronary Syndromes” (joint work Siemens and Pittsburgh Veteran Administration Hospital), Poster in AHRQ conference, Washington DC, 2006.

“Exploiting Parameter Domain Knowledge for Learning in Bayesian Networks”, Ph.D. Dissertation, TR CMU-CS-05-147, Carnegie Mellon University 2005.

“What is the Most Efficient Data Extraction Method for Quality Improvement and Research in Cardiology?: A Comparison of REMIND Artificial Intelligence Software vs. Manual Chart Abstraction for Determining ACC/AHA Guideline Adherence in Non-ST Elevation Acute Coronary Syndromes” (joint work Siemens and Pittsburgh Veteran Administration Hospital), Poster in ACC Conference 2005.

“Machine Learning for Sub-Population Assessment: Evaluating the C-Section Rate of Different Physician Practices” (with Rich Caruana, Peng Jia, Matt Troup, Rao Bharat, Cynthia Simms) - Poster in ICML conference 2001.

“On a Particular Class of Graphs” (in Romanian) - graduation dissertation, University of Bucharest, June 2000.

**Reviewer** Machine Learning Journal, Journal of Machine Learning Research, IEEE Transactions on Artificial Neural Nets, KDD, ECML, CVPR, SDM, NESCAI

**Students** Co-advisor for Ciprian Raileanu’s MSc Thesis, Max Plank Inst. Saarbrucken, 2007.

<b>Awards</b>	<b>Best Foundations Paper Award</b> – AMIA Conference	<b>2003</b>
	<b>Nominated for Best Paper and Warner Awards</b> – AMIA Conference	<b>2002</b>
	<b>Merck Computational Biology and Chemistry Fellowship</b>	<b>2002 – 2003</b>
	<b>Best of class of 2000 (GPA 10/10)</b> – University of Bucharest	<b>2000</b>
	<b>Socrates European Scholarship</b>	<b>1999</b>
	<b>Gold Medal</b> – 37 <sup>th</sup> International Math Olympiad, India	<b>1996</b>
	<b>Silver Medal</b> – 13 <sup>th</sup> Balkan Math Olympiad, Romania	<b>1996</b>

**Languages**      Fluent in English, Romanian (native language), basic in French, Italian, Spanish

**Computer Skills**      Java, Eclipse, C / C++, Matlab, MS SQL Server/Access, Perl, XML, HTML

**Personality**      Ambitious, confident, passionate, team player

**Hobbies**      Salsa dancing, Soccer, Yoga

**References**      Available upon request