CURRICULUM VITAE

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http://biorg.cis.fiu.edu/ (Research Group)

❑ EDUCATION

DEGREE	DISCIPLINE	INSTITUTION	YEAR
B. Tech.	Electrical Engineering	Indian Institute of Technology, Bombay, India	1982
Ph. D.	Computer Science	University of Wisconsin - Madison	1989

❑ EXPERIENCE

RANK/POSITION	DEPARTMENT/DIVISION	INSTITUTION	PERIOD
Professor	School of Computer Science	Florida International University	From Fall 2004
Visiting Scholar	Next Generation Sequencing	Strand Life Sciences	Jan-Apr 2009
Visiting Professor	Microbiology & Molecular Genetics	Harvard Medical School	Fall 2006
Visiting Researcher	IMAGEN-NICTA	National ICT Australia (NICTA)	Feb 2006
Associate Professor	School of Computer Science	Florida International University	2001-2004
Professor	Mathematical Sciences Department	University of Memphis	2001
Associate Professor	Mathematical Sciences Department	University of Memphis	1995-2001
Visiting Professor	Computer Science Department	University of Copenhagen,Denmark	May-July 2000
Visiting Professor	Computer Science Department	Lund University, Sweden	May-June 1999
Visiting Professor	Inst. for Advanced Comp. Studies	University of Maryland,College Park	Nov-Dec 1997
Visiting Professor	Applied Mathematics Department	University at StonyBrook, NY	Sept-Oct 1997
Visiting Professor	Computer Science Department	University of Magdeburg, Germany	July 1997
Visiting Professor	Computer Science Department	University of Copenhagen,Denmark	May 1997
Assistant Professor	Mathematical Sciences Department	University of Memphis	1989 – 1995
Graduate Assistant	Computer Science Department	University of Wisconsin - Madison	1982 – 1989

❑ RESEARCH AREAS

- Computational Biology and Bioinformatics
- Design and Analysis of Geometric Algorithms
- Experimental Algorithmics
- Graph Theory and Combinatorics

❑ PROFESSIONAL HONORS

- **FIU School of Computer Science "Best Research" Award,** 2007.
- **FIU Faculty Senate Award for Excellence in Research,** 2004.
- **FIU School of Computer Science "Best Research" Award,** 2004.
- **Editor, International Journal of Bioinformatics Research & Applications,** since 2007. [https://www.inderscience.com/browse/index.php?journalcode=ijbra]
- **Editor, Journal of Discrete Algorithms,** since 2000. [http://www.elsevier.com/locate/jda]
- **Editor, Journal of Bionanoscience,** since 2005. [http://www.aspbs.com/job.html]
- **Conference Program Committee Memberships:**
  - **ISBRA '09 – Program Co-Chair:** Intl. Workshop on Bioinformatics Res. and Appln., Ft. Lauderdale, FL, May 2009.
  - **ICMLA'08 –** Intl. Conference on Machine Learning and Applications, San Diego, CA, Dec 2008;
  - **CBB '08** The IASTED Intl. Symp. Comput. Biology and Bioinformatics, Orlando, FL, Nov 2008;
  - **AAIM '08 –** Algorithmic Aspects in Information and Management, Shanghai, China, June 2008.
  - **ISBRA '08 –** Intl. Workshop on Bioinformatics Res. and Appln., Atlanta, GA, May 2008.
  - **ICMLA'07 –** Intl. Conference on Machine Learning and Applications, Cincinnati, OH, Dec 2007;
  - **BIBM '07 –** IEEE Conference on Bioinformatics and Biomedicine, Silicon Valley, November 2007.
  - **BIBE '07 –** 7th IEEE Symposium on Bioinformatics and Bioengineering, Boston, MA, October 2007.
  - **BLSC07 –** IEEE Intl. Symp. on Bioinformatics and Life Science Computing, Niagara Falls, Canada, 2007;
  - **WEA 2007 –** 6th Workshop on Experimental Algorithms, Rome, Italy, June 2007;
  - **ISBRA '07 –** Intl. Workshop on Bioinformatics Res. and Appln., Atlanta, GA, May 2007.
  - **ICISTM'07 –** Intl. Conf. in Information Systems, Technology and Management, India, March 2007;
  - **ICMLA'06 –** Intl. Conference on Machine Learning and Applications, Orlando, FL, Dec 2006;
  - **ISAAC'06 –** Intl. Symposium on Algorithms and Computation**,** Kolkatta, India, December 2006;
  - **Geometric Networks and Metric Embeddings –** Dagstuhl Workshop, Germany, November 2006.
  - **IWBRA'06 –** International Workshop on Bioinformatics Research and Applications, Reading, 2006.
  - **IWBRA'05 –** International Workshop on Bioinformatics Research and Applications, Atlanta, 2005.
  - **HiPCoMB'05 –** First IEEE Workshop on High Performance Computing in Medicine and Biology, Fukuoka, Japan, 2005.
  - **ICBA 2004 – (Program Co-Chair)** Intl. Conference on Bioinformatics & Applications**,** Ft Lauderdale, Dec 16-19, 2004. [
  - **WADS 2003 –** Workshop on Algorithms & Data Structures, 2003**.**
  - **ALENEX'02 –** Algorithm Engineering & Experiments, San Francisco, Jan 6-8, 2002.
  - **SPIRE'00 –** String Processing and Inform. Retrieval Conf., Sep '00, Spain.
  - **SPIRE'99 –** String Processing and Inform. Retrieval Conf., Sep '99, Mexico.

- **Invited Speaker:**
  - **ICISIP–2004 –** The Intl. Conf. on Intelligent Sensors & Info. Processing, Jan 2004, Chennai, India.
  - **CIT–2001 –** The 4th Intl. Conference on Information Technology, Dec 2001, Gopalpur-on-Sea, India.
  - ***Theory Pearls* Lecture Series**: 1999 (Computational Geometry), Lund University, Sweden.
  - ***Theory Pearls* Lecture Series**: 2000 (Computational Biology), Lund University, Sweden.
- **Invited Tutorial Session** (Bioinformatics)**:**
  - **ISBRA 2008 –** "Comparative Genomics," May 2008, Atlanta.
  - **Invited Lecture Series:** National University of Colombia, Bogota, 2007
  - **CSB–2005 –** "Pattern Discovery in Sequences and Structures," August 2005, San Francisco.
  - **ICISIP–2004 –** The Intl. Conf. on Intelligent Sensors & Info. Processing, Jan 2004, Chennai.
  - **Invited Lecture Series & Tutorial Sessions:** National University of Colombia, Bogota 2003

❑ PUBLICATIONS

BOOKS

1. **Bioinformatics Research and Applications.** Editors: Ion Mandoiu, **Giri Narasimhan,** Yanqing Zhang; *Springer Verlag*. Lecture Notes in Computer Science Series, Vol. 5542, April 2009. [978-3-642-01550-2]
2. **Geometric Spanner Networks,** Research Monograph. Authors: **Giri Narasimhan** and Michiel Smid; *Cambridge University Press*, 2007. [ISBN: 0521815134]; Also appeared in eBook format.
3. **Advances in Bioinformatics and its Applications.** Editors: Matthew He, **Giri Narasimhan,** Sergei Petoukhov. *World Scientific Press*, June 2005. [ISBN: 981256148X]

Taped Lecture Series

1. **Narasimhan**, "Pattern Discovery in Bioinformatics," *Henry Stewart Lecture Series*, 2006. [http://www.hstalks.com/bioinfo/index.htm]

Book Chapters

1. Gudmundsson, **Narasimhan**, Smid, "Geometric Spanners," In *Encyclopedia of Algorithms*, Ed. M. Kao, p360-364, Springer, 2008.
2. Gudmundsson, **Narasimhan**, Smid, "Plane Geometric Spanners," In *Encyclopedia of Algorithms*, Ed. M. Kao, p653-656, Springer, 2008.
3. Gudmundsson, **Narasimhan**, Smid, "Applications of Geometric Spanners," In *Encyclopedia of Algorithms*, Ed. M. Kao, p40-43, Springer, 2008.
4. Yang, Zeng, Mathee, **Narasimhan**, "PlasmoTFBM: An Intelligent Queriable Database for Predicted Transcription Factor Binding Motifs in *Plasmodium falciparum*," In *Methods of Microarray Data Analysis V*, McConnell, Lin, and Hurban (Eds.), Springer, 121-136, 2007.
5. Renugopalakrishnan, Wei, **Narasimhan**, Verma, Li, and Anumanthan, "Enhancement of Protein Thermal Stability: Toward the Design of Robust Proteins for Bionanotechnological Applications," In *Bionanotechnology: Proteins to Nanodevices*, 117-139, Springer Press, 2006.
6. Zheng, George, **Narasimhan**, "Microarray Data Analysis using Neural Network Classifiers and Gene Selection Methods," In *Methods of Microarray Data Analysis IV*, Shoemaker and Lin (Eds.), Springer, 207-222, 2005.
7. Mathee, **Narasimhan,** "Detection of DNA-binding Helix-Turn-Helix Motifs in Proteins using the Pattern Dictionary Method," In *Methods in Enzymology*, Eds. S. Adhya and S. Garges, Vol. **370**, Chapter 22, 250-264, 2003. [**Invited**]
8. Manber, **Narasimhan**, "A Generalization of Lovász's Θ Function," in *Polyhedral Combinatorics*, Eds. W. Cook and P. D. Seymour, DIMACS Series, AMS **1**, 19-27, 1990.

Refereed journal publications

1. Buendia, **Narasimhan**, "Serial Evolutionary networks of within-patient HIV-1 sequences reveal patterns of evolution of X4 strains," *BMC Systems Biology*, In Press, 2009
2. Klein, Knauer, **Narasimhan**, Smid, "On the Dilation Spectrum of Paths, Trees, and Cycles," *Computational Geometry — Theory and Applications,* In Press, 2009.
3. Doud, Zeng, Schneper, **Narasimhan**, Mathee, "Approaches to Analyze Dynamic Microbial Communities such as those seen in Cystic Fibrosis Lung," *Human Genomics*, In Press, 2009.
4. Gudmundsson, van Kreveld, **Narasimhan**, "Region-Restricted Clustering for Geographic Data Mining," *Computational Geometry: Theory & Applications*, **43**(3):231-240, 2009.
5. Entry, Mills, Mathee, Jayachandran, Sojka, **Narasimhan**, "Influence of irrigated agriculture on soil microbial diversity," *Applied Soil Ecology*, **40**(1):146-154, 2008.
6. Gudmundsson, Levcopoulos, **Narasimhan**, Smid, "Approximate Distance Oracles for Geometric Spanners," *ACM Transactions on Algorithms*, 4(1), Article 10, 2008.
7. Mathee, **Narasimhan**, Valdes, Qiu, Matewish, Koehrsen, Rokas, Yandava, Engels, Zeng, Olavarietta, Doud, Smith, Montgomery, White, Godfrey, Kodira, Birren, Galagan, Lory "Dynamics of *Pseudomonas aeruginosa* genome evolution," *Proceedings of the National Academy of Sciences*, **105**(8):3100-05, 2008. Reviews: (a) Highlighted by *Genome Technology Online*, Feb 20, 2008, "Survival through genome shapeshifting," and (b) Reviewed by *Faculty of 1000 Biology*.
8. Buendia, **Narasimhan**, "The role of internal node sequences and the molecular clock in the analysis of serially-sampled data," *International Journal of Bioinformatics Research and Applications*, **4**(1):107-121, 2008.
9. Buendia, **Narasimhan**, "Sliding MINPD: Building Evolutionary Networks of Serial Samples via an Automated Recombination Detection Approach," *Bioinformatics*, **23**(22):2993-3000, 2007.
10. Kuhn, **Narasimhan**, Nakamura, Brown, Schnell, Meerow, "Identification of Cacao TIR NBS-LRR resistance gene analogs and their use as genetic markers," *Journal of American Society for Horticultural Science*, **131**(6):806-813, 2007.
11. Gudmundsson, **Narasimhan**, Smid, "Distance-preserving Approximations of Polygonal Paths," *Computational Geometry: Theory & Applications*, **36**:183-196, 2007.
12. Buendia, **Narasimhan**, "Serial NetEvolve: a flexible utility for generating serially-sampled sequences along a tree or recombinant network," *Bioinformatics*, **22**(18):2313-14, 2006.
13. Yang, Mills, Mathee, Wang, Jayachandran, Sikaroodi, Gillevet, Entry, **Narasimhan**, "An ecoinformatics tool for microbial community studies: Supervised classification of Amplicon Length Heterogeneity (ALH) profiles of 16S rRNA," *Journal of Microbiological Methods*, **65**(1):49-62, 2006.
14. Renugopalakrishnan, Garduno-Juarez, **Narasimhan**, Verma, Wei, and Li, "Rational design of thermally stable proteins: Relevance to bionanotechnology," *Journal of Nanoscience and Nanotechnology*, **5**(11):1759-67, 2005.
15. Handfield, Mans, Zheng, Lopez, Progulske-Fox, **Narasimhan**, Baker, Lamont, "Distinct Expression Profiles Characterize Oral Epithelium-Microbiota Interactions," *Cellular Microbiology*, **7**(6):811-823, 2005.
16. Bose, Maheswari, **Narasimhan**, Smid, Zeh, "Approximating geometric bottleneck shortest paths," *Computational Geometry: Theory & Applications*, **29**(3), 233-249, 2004.
17. Plata, **Narasimhan**, Ohman, Barakat, Hentzer, Molin, Kharazmi, Høiby, Mathee, "Detection of Alginate production affects *Pseudomonas aeruginosa* biofilm development and architecture, but is not essential for biofilm formation," *Journal of Medical Microbiology*, **53**(7): 679-690, 2004.

18. Andersson, Gudmundsson, Levcopoulos, **Narasimhan**, "Balanced Partition of Minimum Spanning Trees," *The International Journal of Computational Geometry and Applications*, **13**(4): 303-316, 2003. [**Invited**]
19. T. R. Sutter, X.-R. He, P. Dimitrov, L. Xu, **G. Narasimhan,** E. O. George, C. H. Sutter, C. Grubbs, R. Savory,M. Stephan-Gueldner, D. Kreder, M. J. Taylor, R. Lubet, T. A. Patterson, T. W. Kensler, "Multiple comparisons model-based clustering and ternary pattern tree numerical display of gene response to treatment: Procedure and application to the preclinical evaluation of chemopreventive agents," *Molecular Cancer Therapeutics*, **1**(14):1283-1292, 2002.
20. **Narasimhan,** Bu, Gao, Wang, Xu, Mathee, "Mining Protein Sequences for Motifs," *Journal of Computational Biology,* **9**(5): 707-720, 2002.
21. Gudmundsson, Levcopoulos, **Narasimhan**, "Fast Greedy Algorithms for Constructing Sparse Geometric Spanners," *SIAM Journal of Computing,* **31**(5): 1479-1500, 2002.
22. **Narasimhan,** Smid, "Approximation Algorithms for the Bottleneck Stretch Factor Problem," *Nordic Journal of Computing,* **9**(1): 13-31, 2002.
23. Bhattacharya, Das, Mukhopadhyay, **Narasimhan,** "Optimally computing a shortest weakly visible line segment inside a simple polygon." *Computational Geometry: Theory and Applications,* **23**(1): 1-29, 2002.
24. Chatterjee, **Narasimhan**, "Graph-Theoretic Techniques in Statistical Design Problems," *Journal of Statistical Planning and Inference*, **102**(2): 377-387, 2002.
25. Levcopoulos, **Narasimhan**, Smid, "Improved Algorithms for Constructing Fault-Tolerant Spanners," *Algorithmica,* **32**(1): 144-156, 2002.
26. **Narasimhan**, Zachariasen, "Geometric Minimum Spanning Trees Via Well-Separated Pair Decompositions," *Journal of Experimental Algorithmics,* **6**, 2001. [**Invited**]
27. Gudmundsson, Levcopoulos, **Narasimhan**, "Approximating Minimum Manhattan Networks," *Nordic Journal of Computing*, **8**(2): 219-232, 2001.
28. Jagota, **Narasimhan,** Soltes, "A Generalization of Maximal Independent Sets," *Discrete Applied Mathematics,* **109**(3): 223-235, 2001.
29. **Narasimhan**, Smid, "Approximating the Stretch Factor of Euclidean Graphs," *SIAM J. of Computing,* **30**(3): 978-989, 2000.
30. **Narasimhan,** "On Hamiltonian Triangulations in Simple Polygons," *The International Journal of Computational Geometry and Applications*; **9**(3): 261-276, 1999.
31. Jagota, Regan, **Narasimhan, "**Information Capacity of Binary Weights Associative Memories," *Neurocomputing*, **19**(1-3): 35-58, 1998.
32. Das, Heffernan, **Narasimhan**, "LR-Visibility in Polygons," *Computational Geometry - Theory and Applications*, **7**(1-2): 37-57, 1997. [**Invited**]
33. Das, **Narasimhan**, "A Fast Algorithm for Constructing Sparse Euclidean Spanners," *International Journal of Computational Geometry and Applications,* **7**(4): 297-316, 1997. [**Invited**]
34. Chandra, Das, **Narasimhan,** Soares, "New Sparseness Results on Graph Spanners," *International Journal of Computational Geometry and Applications*, **5**(1-2): 125-144, 1995.
35. Das, Heffernan, **Narasimhan**, "Finding All Weakly Visible Chords of a Polygon in Linear Time," *The Nordic Journal of Computing*, **1**, 433-457, 1994. [**Invited**]
36. Manber, **Narasimhan**, "Stability Number and Chromatic Number of Tolerance Graphs" *Discrete Applied Mathematics* **36**, 47-56, 1992.
37. **Narasimhan**, "A Note on the Hamiltonian Circuit Problem on Directed Path Graphs," *Information Processing Letters,* **32**(4), 167-170, 1989.

Refereed conference publications

1. Elshahat, Parhizgari, **Narasimhan**, Anwar, “Portfolio optimization using greedy algorithm,” Proceedings of the Annual Meeting of the Multinational Finance Society, Crete, To Appear, 2009.
2. Zeng, Mathee, Schneper, **Narasimhan**, “A functional network of yeast genes using gene ontology information,” Proceedings of the IEEE Conference on Bioinformatics and Biomedicine (BIBM2008), p343-346, 2008.
3. Zheng and **Narasimhan**, “A Branch-and-bound approach to knowledge-based protein structure assembly,” Proceedings of the IEEE Conference on Bioinformatics and Bioengineering (BIBE2008), p1-5, 2008.
4. Zeng, Ding, **Narasimhan**, Holbrook, “Estimating Support for Protein-Protein Interaction Data with Applications to Function Prediction,” Proceedings of the LSS Computational Systems Bioinformatics Conference (CSB2008), p73-84, 2008.
5. Milledge, Zheng, Mullins, **Narasimhan**, “SBLAST: Structural Basic Local Alignment Tool using Geometric Hashing,” Proceedings of the IEEE Conference on Bioinformatics and Bioengineering (BIBE 2007), p1343-47, 2007.
6. Zeng, Yang, Li, **Narasimhan**, “On the Effectiveness of Constraints Sets in Clustering Genes,” Proceedings of the IEEE Conference on Bioinformatics and Bioengineering (BIBE 2007), p79-86, 2007.
7. Zeng, Mathee, **Narasimhan**, “IEM: An Algorithm for Iterative Enhancement of Motifs using Comparative Genomics Data,” LSS Computational Systems Bioinformatics (CSB 2007), p227-35, 2007.
8. Yan, Zhang, Zhang, Chen, **Narasimhan**, “A Graph Reduction Method for 2D Snake Problems,” IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2007.
9. Gudmundsson, Klein, **Narasimhan**, Smid, Wolff, “Abstracts Collection -- Geometric Networks and Metric Space Embeddings,” Dagstuhl Seminar Proceedings 06481, p1-21, 2007.
10. Zeng and **Narasimhan**, “IEM: An algorithm for iterative enhancement of motifs using comparative genomics data,” LSS Computational Systems Bioinformatics Conference (CSB), p227-35, 2007.
11. Buendia and **Narasimhan**, “Searching for recombinant donors in a phylogenetic network of serial samples,” Lecture Notes in Computer Science, Vol. 4463, Springer Verlag, p109-20, 2007.
12. Zeng and **Narasimhan**, “Enhancing Motif Discovery using Comparative Genomics Data,” Lecture Notes in Computer Science, Vol. 4463, Springer Verlag, p329-37, 2007.
13. Alvarez, Chatfield, Cox, Crumpler, D'Cunha, Gutierrez, Ibarra, Johnson, Kumar, Milledge, **Narasimhan**, Sadjadi, Zhang, "CyberBridges: A model collaboration infrastructure for e-Science," Proceedings of the IEEE CCGrid Conference, p65-72, 2007.
14. Peng, Li, **Narasimhan**, “Mining the Database of Transcription Factor Binding Sites,” Proceedings of the 6th IEEE Symposium on Bioinformatics and Bioengineering (BIBE), p61-64, 2006.
15. Gudmundsson, van Kreveld, **Narasimhan**, “Region-Restricted Clustering for Geographic Data Mining,” Lecture Notes in Computer Science, Vol. 4168, Springer Verlag, p399-410, 2006.
16. Milledge, Zheng, **Narasimhan**, “Discovering Sequence-Structure Patterns in Proteins with Variable Secondary Structure,” Lecture Notes in Computer Science, Vol. 3992, p702-709, Springer Verlag, 2006.
17. Zheng, Milledge, George, **Narasimhan**, “Pooling Evidence to Identify Cell Cycle-Regulated Genes,” Lecture Notes in Computer Science, Vol. 3992, Springer Verlag, p694-701, 2006.

18. Buendia, Collins, **Narasimhan**, “Reconstructing ancestor-descendant lineages from serially-sampled data: a comparison study,” Lecture Notes in Computer Science, Vol. 3992, Springer Verlag, p 807-814, 2006.
19. Klein, Knauer, **Narasimhan**, Smid, ”Exact and Approximation Algorithms for Computing the Dilation Spectrum of Paths, Trees, and Cycles,” *Lecture Notes in Computer Science*, Vol. 3827, Springer Verlag, p849-858, 2005.
20. Yang, Zeng, Li, **Narasimhan**, ”A Knowledge-Driven Method to Evaluate Multi-Source Clustering,” *Lecture Notes in Computer Science*, Vol. 3759, Springer Verlag, p196-202, 2005.
21. Yang, Zeng, Li, **Narasimhan**, “Clustering genes using gene expression and text literature data,” *Proceedings of the IEEE Bioinformatics Conference* (CSB 2005), Stanford, IEEE Computer Society Press, 329-340, 2005.
22. Milledge, Khuri, Wei, Yang, Zheng, **Narasimhan**, “Seqeunce-Structure Patterns: Discovery and Applications,” *Proceedings of the 6th Atlantic Symposium on Computational Biology and Genome Informatics (CBG)*, Salt Lake City, 1282-1285, July 2005.
23. Wang, Yang, Mathee, **Narasimhan**, “Clustering using Adaptive Self-Organizing Maps (ASOM) and Applications,” Lecture Notes in Computer Science, Vol. 3515, Springer Verlag, 944-51, May 2005.
24. Gudmundsson, **Narasimhan**, Smid, “Fast Pruning of Geometric Spanners,” *Proceedings of the 22th Annual Symposium on Theoretical Aspects of Computer Science* (STACS), Lecture Notes in Computer Science, Vol. 3404, Springer Verlag, 508-20, February 2005.
25. Bobodilla, Niño, **Narasimhan**, “Predicting and Characterizing Metal-Binding Sites Using Support Vector Machines,” *Proceedings of ICBA'04*, Ft. Lauderdale, p307-318, December 2004.
26. Yang, Zeng, Mathee, **Narasimhan**, “Querying a Database of Regulatory Elements,” *Proceedings of ICBA'04*, Ft. Lauderdale, p81-92, December 2004.
27. Milledge, Zheng, **Narasimhan**, “Applications of Data Mining in Epitope Prediction,” *Proceedings of ICBA'04*, Ft. Lauderdale, p390-401, December 2004.
28. Sun, Deng, Mathee, **Narasimhan**, ”Training Set Design for Pattern Discovery with Applications to Protein Motif Detection,” *Proceedings of ICBA'04*, Ft. Lauderdale, p240-251, December 2004.
29. Yang, Zeng, Mathee, **Narasimhan**, “Mining Regulatory Elements in the *Plasmodium falciparum* Genome Using Gene Expression Data,” *Proceedings of CAMDA'04: Critical Assessment of Microarray Data Analysis*, 16-20, Durham, NC, November 2004.
30. Buendia, **Narasimhan**, “Distance-based Analysis of Serially-Sampled HIV Quasispecies,” *Proceedings of the IEEE Bioinformatics Conference* (CSB 2004), Stanford, IEEE Computer Society Press, 110-119, 2004.
31. Cazalis, Milledge, **Narasimhan**, “Probe Selection Algorithms,” Proceedings of the *8th World Multiconference on Systemics, Cybernetics and Informatics* (SCI 2004), Orlando, July 2004.
32. Zheng, George, **Narasimhan**, “Neural Network Classifiers and Gene Selection Methods for Microarray Data on Human Lung Adenocarcinoma,” *Proceedings of CAMDA 2003: Critical Assessment of Microarray Data Analysis*, 63-67, November 2003, Durham, NC.
33. Gudmundsson, **Narasimhan**, Smid, “Distance-preserving Approximations of Polygonal Paths,” *Proceedings of Foundations of Software Technology and Theoretical Computer Science* (FSTTCS 2003), Lecture Notes in Computer Science, Vol. 2914, Springer Verlag, 217-228, December 2003.
34. Wei, Kuhn, **Narasimhan**, “Degenerate Primer Design via Clustering,” *Proceedings of the IEEE Bioinformatics Conference* (CSB 2003), Stanford, IEEE Computer Society Press, 75-83, August 2003.

35. Bose, Maheswari, **Narasimhan**, Smid, Zeh, "Approximating geometric bottleneck shortest paths," *Proceedings of the 19th Annual Symposium on Theoretical Aspects of Computer Science* (STACS 2003), Lecture Notes in Computer Science, Vol. 2607, Springer Verlag, 38-49, February 2003.
36. Gudmundsson, Levcopoulos, **Narasimhan**, Smid, "Approximate distance oracles revisited," Proceedings of the *13th Annual International Symposium on Algorithms and Computation*, ISAAC'02, Vancouver, 357-368, Nov. 2002. **Invited** for submission to special issue of *Algoithmica*.
37. Andersson, Gudmundsson, Levcopoulos, **Narasimhan**, "Balanced Partition of Minimum Spanning Trees," Proceedings of the *2nd International Workshop on Computational Geometry and Applications,* CGA'02, Amsterdam, April 2002. Also, presented at the *18th European Workshop on Computational Geometry*, Warszawa, April 2002; **Invited** for submission to special issue of *Nordic Journal of Computing*.
38. Gudmundsson, Levcopoulos, **Narasimhan**, Smid, "Approximate Distance Oracles for Geometric Graphs," Proceedings of the *SIAM-ACM Symposium on Discrete Algorithms*, 828-837, San Francisco, January 2002.
39. Bhattacharya, Mukhopadhyay, **Narasimhan,** "Optimal Linear-time Algorithms for Weak Visibility Problems," Proceedings of the *Workshop on Data Structures and Algorithms*, Providence, Lecture Notes in Computer Science, Vol. 2125, Springer Verlag, 438-449, August 2001.
40. Charikar, Khuller, Mount, **Narasimhan**, "Algorithms for Facility Location Problems with Outliers," *Proceedings of SIAM-ACM Symposium on Discrete Algorithms*, Washington D.C., 642-651, 2001.
41. **Narasimhan,** Smid, "Approximation Algorithms for the Bottleneck Stretch Factor Problem," *Proceedings of 18th International Symposium on Theoretical Aspects of Computer Science*, Dresden, Germany, Lecture Notes in Computer Science, Vol. 2010, Springer Verlag, 502-513, 2001.
42. Gudmundsson, Levcopoulos, **Narasimhan**, "Improved Greedy Algorithms for Constructing Sparse Geometric Spanners," *Proceedings of the Seventh Scandinavian Workshop on Algorithm Theory,* Lecture Notes in Computer Science, Vol. 1851, 314-327, Springer Verlag (2000); **Invited** for submission to special issue of *Nordic Journal of Computing*.
43. **Narasimhan**, Zachariasen, Zhu, "Experiments with Computing Geometric Minimum Spanning Trees," *Proceedings of the Workshop on Algorithm Engineering and Experiments,* January 2000; **Invited** for submission to special issue of *Journal of Experimental Algorithms*.
44. Gudmundsson, Levcopoulos, **Narasimhan**, "Approximating Minimum Manhattan Networks," *Proceedings of APPROX-RANDOM,* 28-37, 1999.
45. Gao, Mathee, **Narasimhan**, Wang, "Detection of HTH Motifs via Data Mining," *Proceedings of SPIRE' 99 – String Processing and Information Retrieval,* 63-72, 1999.
46. Hernandez, **Narasimhan**, Niño, "Evolutionary Set Matching," *Smart Engineering Systems:Neural Networks, Fuzzy Logic, Evolutionary Programming, Data Mining, and Rough Sets*, Volume 8, Editors: C. H. Dagli, M. Akay, A. L. Buczak, O. Ersoy, B. R. Fernandez, 265-272, 1998.
47. Arkin, Mitchell, **Narasimhan**, "Resource-Constrained Geometric Network Optimization," *Proceedings of the ACM Symposium on Computational Geometry*, 307-316, 1998.
48. Levcopoulos, **Narasimhan,** Smid "Efficient algorithms for constructing fault-tolerant geometric spanners," *Proceedings the ACM Symposium on the Theory of Computing*, 186-195, 1998.
49. **Narasimhan**, "On Hamiltonian Triangulations in Simple Polygons," *Proceedings of the Fifth International Workshop, WADS '97*, Lecture Notes in Computer Science No. 1272, Springer Verlag, 321-330, 1997.
50. Das, **Narasimhan**, Salowe, "A New Way to Weigh Malnourished Euclidean Graphs," *Proceedings of the Sixth Annual SIAM-ACM Symposium on Discrete Algorithms*, 215-222*,* 1995.

51. Das, **Narasimhan**, “Short Cuts in Higher Dimensional Space,” *Proceedings of the Seventh Canadian Conference on Computational Geometry*, 103-108, 1995.
52. Das, Heffernan, **Narasimhan**, “Finding All Weakly Visible Chords of a Polygon in Linear Time,” *Proceedings of the Fourth Scandinavian Workshop on Algorithm Theory,* Lecture Notes in Computer Science, Vol. 824, Springer Verlag, 119-130, 1994.
53. Das, **Narasimhan**, “Optimal Linear-Time Algorithm for the Shortest Illuminating Line Segment in a Polygon,” *Proceedings of the Tenth Annual ACM Symposium on Computational Geometry*, 259-268, 1994.
54. Das, **Narasimhan**, “A Fast Algorithm for Constructing Sparse Euclidean Spanners,” *Proceedings of the Tenth Annual ACM Symposium on Computational Geometry*, 132-139, 1994.
55. Das, Heffernan, **Narasimhan**, “Optimally Sparse Spanners in 3-dimensional Euclidean Space,” *Proceedings of the Ninth Annual ACM Symposium on Computational Geometry*, 53-62, 1993.
56. Das, Heffernan, **Narasimhan**, “LR-Visibility in Polygons,” *Proceedings of the Fifth Canadian Conference on Computational Geometry*, Waterloo, Canada, 303-308, 1993.
57. Chandra, Das, **Narasimhan**, Soares, “New Sparseness Results on Graph Spanners,” *Proceedings of the Eighth Annual ACM Symposium on Computational Geometry*, 192-201, 1992.
58. Das, **Narasimhan**, “Geometric Searching and Rectilinear Link Distances,” *Algorithms and Data Structures,* Lecture Notes in Computer Science, Eds. F. Dehne, J.-R. Sack, and N. Santoro, Springer Verlag **519**, 261-272, 1991.

Software Packages

1. **Sliding MINPD:** Program to reconstruct ancestor-descendant relationships among serially-sampled sequences, 2007. Joint work with P. Buendia. [http://biorg.cis.fiu.edu/SlidingMinPD/]
2. **Serial NetEvolve:** Program to generate serially-sampled sequences evolved along a randomly generated coalescent tree or network, 2006. Joint work with P. Buendia. [http://biorg.cis.fiu.edu/SNE/]
3. **GCC:** Generalized constrained clustering algorithm to cluster genes by exploiting constraints generated from incomplete heterogeneous data sources, 2007. Joint work with E. Zeng, C. Yang, T. Li. [http://biorg.cis.fiu.edu/GCC/]
4. **MSC:** Multi-source clustering algorithm to cluster genes by integrating information from two or more heterogeneous sources of data, 2006. Joint work with C. Yang, E. Zeng, and T. Li. [http://biorg.cis.fiu.edu/MSC/]
5. **DePiCt 2.0:** Web-based version of the BioPerl software for designing degenerate PCR primers using clustering; Joint work with students X. Wei, C. Archer and J. Farrow, 2005. [http://www.cs.fiu.edu/~giri/bioinf/DePiCt1.0/WebVersion/2depict.htm] [http://www.cs.fiu.edu/~giri/bioinf/DePiCt/]
6. **ASOM:** Adaptive Self-Organizing Maps software in Java; Joint work with Y. Wang, 2003.
7. **μ-NP:** Microarray Data Analysis software in Java using non-parametric statistical analysis for comparison of drugs and for clustering of genes; Joint work with G. Zheng, 2001.
8. **BIP:** *Biofilm Image Processing* (BIP) package (Visual C++); Software available over the internet at [http://www.cs.fiu.edu/~giri/BIP]; Joint work with Li, Ji, Heydorn, Molin, and Mathee, 2000.
9. **GYM 2.0:** Improved HTH motif detection (C++). Work with C. Bu and K. Mathee, 1999. Java/CGI Version usable over the internet at [http://www.cs.fiu.edu/~giri/bioinf/GYM2/welcome.html]. Earlier C++ version was done by Y. Gao, K. Mathee, and X. Wang, 1998.
10. **GeoMST:** Computing *Minimum Spanning Trees* of a set of points in higher dimensional space under arbitrary Euclidean metrics (C++); Software available on request; Fastest available software for this problem for input points from three or higher dimensional space, 2000.
11. **PlasmoTFBM:** Interactive database to search for transcription factor binding motifs in *Plasmodium falciparum* genome. [http://biorg.cs.fiu.edu/TFBM/] and [http://biorg.cs.fiu.edu/TFBM/tfbm.php]

❑ RECENT INVITED TALKS AND PRESENTATIONS

1. *Optimal 3-dimensional Spanners*, SUNY Stonybrook, March 1993.
2. *Graph Spanners*, L.R.I., Université de Paris - Sud, Orsay, France, June 1993.
3. *Graph Spanners*, Vanderbilt University, Nashville, February 1995.
4. *Graph Spanners*, Kent State University, Kent, March 1995.
5. *Geometric Networks,* University of Missouri, Kansas City, March 1997.
6. *Geometric Networks*, University of Copenhagen, Denmark, May 1997.
7. *Geometric Networks*, Lund University, Sweden, May 1997.
8. *Generalizations of Independent Sets*, L.R.I., Université de Paris - Sud, Orsay, June 1997.
9. *Geometric Networks*, Otto-von-Guericke-Universität,Magdeburg, Germany, July 1997.
10. *PTAS for Geometric Optimization Problems*, Otto-von-Guericke-Universität, Magdeburg, Germany, July 1997.
11. *Geometric Networks and Fault-tolerant Spanners*, State University of New York, StonyBrook, NY, Oct 1997.
15. *Geometric Networks and Fault-tolerant Spanners*, University of Maryland, College Park, MD, November 1997.
16. *Resource Constrained Geometric Network Optimization,* Lund University, Sweden, May 1998.
17. *Resource Constrained Geometric Network Optimization,* University of Copenhagen, Denmark, May 1998.
18. *Fault-Tolerant Spanners*, Lund University, Sweden, June 1998.
19. *Fault-Tolerant Spanners*, Otto-von-Guericke-Universität,Magdeburg, Germany, June 1998.
20. *Facility Location with Dynamic Distance Functions,* SWAT Conference, Stockholm, Sweden July 1998.
21. *Resource Constrained Geometric Network Optimization,* University of Maryland, College Park, MD, Oct 1998.
22. *Geometric Networks*, Special Seminar for GAs, Math Sciences Dept., University of Memphis, October 1998.
23. *Computational Methods for Motif Detection,* Chemistry Department, University of Memphis, October 1998.
24. *Geometric Networks*, Simon Fraser University, Canada, March 1999.
25. *Geometric Networks*, University of British Columbia, Canada, March 1999.
26. *Geometric Spanners,* Talk for the **Theory Pearls** lecture series, Lund University, May 1999.
27. *Approximating Stretch Factors of Euclidean Graphs,* University of Copenhagen, July 1999.
28. *Motif Detection in Protein Sequences,* SPIRE '99 Conference, Cancun, September 1999.
29. *Experiments with Geometric Minimum Spanning Trees,* ALENEX'00 Conference, San Francisco, Jan 2000.
30. *Motif Detection in Protein Sequences,* Talk for the **Theory Pearls** lecture series, Lund University, May 2000.
31. *Experiments with Geometric MSTs,* ARCO Workshop, **Invited Talk**, Copenhagen, May 2000.
32. *Experiments with Geometric MSTs and Spanners,* Dagstuhl Workshop, Germany, September 2000.
33. *Geometric Spanner Networks: A Survey,* **Invited Speaker,** ARCO'01, Lund, Sweden, May 2001.
34. *Pattern Discovery Applications in Bioinformatics,* **Invited Speaker,** CIT '01, India, December 2001.
35. *Open Problems in Geometric Networks,* **Invited Lecture,** First Utrecht-Carleton Workshop, March 2002.
36. *Detection of Helix-Turn-Helix Motifs in Protein Sequences,* ACT-VII, Malaysia, July 2002.
37. *Pattern Discovery Applications in Bioinformatics,* University of Alabama, Birmingham, April 2003.
38. *Degenerate Primer Design via Clustering,* Stanford University, CSB'03, August 2003.
39. *Bioinformatics for CS,* **Invited Lecture,** Universidad Nacional de Colombia, Bogota, November 2003.
40. *Pattern Discovery and its Applications to Bioinformatics,* Tutorial Session, ICISIP 2004, Chennai, Jan 2004.
41. *Microarray Data Analysis using Neural Network Classifiers,* **Invited Talk,** ICISIP 2004, Chennai, Jan 2004.
42. *Bioinformatics Research at FIU*, University of Miami Medical Center, Maimi, FL, March 2004.
43. *Microarray Data Analysis*, University of Florida College of Dentistry, Gainesville, FL, April 2004.
44. *Bioinformatics Research at FIU*, USDA Subtropical Horticulture Research Station, Miami, May 2004.
45. *Shortest Path Queries using Spanners*, KWCG'04, Schloss Dagstuhl, Germany, July 2004.
46. *Transcription Regulation: A Computational Perspective*, University of Miami Medical Center, Apr 2005.
47. *Pattern Discovery*, **Tutorial**, IEEE CSB Conference, Stanford, CA, Aug 2005.
48. *Pattern Discovery in Bioinformatics*, **Invited Talk**, DaMN'05, Bertinoro, Italy, October 2005.
49. *Computational Tools for Ecoinformatics*, SSSAJ05 (Soil Sciences), Invited Speaker, Salt Lake City, Nov 2005.
50. *Predicting TF Binding Sites Using Structural Knowledge*, U Miami, April 2006.
51. *Informatics Aproaches to Analyzing Complex Biomedical Data*, Harvard Medical School, Dec 2006.
52. *Searching for Recombinant Donors in a Phylogenetic Network of Serial Samples*, ISBRA, Atlanta, May 2007.
53. *Motif Prediction using Comparative Genomics Data*, U Miami, June 2007.

❑ FUNDING SUPPORT

FUNDED EXTERNAL GRANTS	AGENCY	AMOUNT	PERIOD
Research Initiation Award (**Sole PI**) *Title*: Sparse Geometric Spanner, Geometric Analysis, and Applications	NSF	$ 60,000	1994-98
Research Grant (**PI**) *Title*: Graph-Theoretic Approaches to VLSI Design Problems	Cadence Design Systems, Inc.	80,000	1996-97
Travel Grant, W. Europe Program (**CoPI**) *Title*: Cycles, Paths, and Communication Networks	NSF	14,000	1993-95
Research Grant (**Sole PI**) *Title*: Algorithms for Eye Laser Surgery	F.E.O. Medical, Inc.	10,000	1999
Pre-NPEBC: Bioinformatics Center for Excellence Planning Grant (CoPI) *Title*: Bioinformatics for Mouse Phenotype Analysis	NIH (Subcontract from U Memphis)	1,800,000 (49,963)	2003-05
CREST: Center for Research Excellence in Science and Technology (Co-Investigator) *Title*: Center of Emerging Technologies for Advanced Information Processing and High-Confidence Systems (*Subproject*: Multi-dimensional and Multi-modal Data Modeling and Query Research)	NSF	4,500,000	2003-08
Curricular Supplements in MARC-U*STAR Institutes (Participant) *Title*: Quantifying Biology in the Classroom (The Q'BIC Plan)	NIH	49,259	2004
NIH-MBRS-SCORE Program (**PI**) *Title*: Integrated Genomic Databases and Microarray Analysis	NIH	370,000	2006-08
NIH-MBRS-SCORE Program (**Collaborator**) *Title*: Role of Pseudomonas aeruginosa beta-lactamase genes	NIH	415,205	2005-08
NIH (Subcontract from Harvard Medical School) *Title*: Design of a *Vibrio Cholerae* pan genome microarray	NIH/Harvard	18,200	2009

FUNDED INTERNAL GRANTS	SOURCE	AMOUNT	PERIOD
Research Initiation Award Matching Funds	University of Memphis	$ 8,500	1994
Faculty Research Grant *Title*: Problems on Graphs	University of Memphis	3,000	1990
Faculty Research Enhancement Award *Title*: Software for Designing Degenerate Primers to Amplify Resistance Gene Homologues from *T. Cacao*	Access to Biomedical Research (ABR), FIU	3,500	2003
Faculty Research Enhancement Award *Title*: Integrated Genomic Databases	Access to Biomedical Research (ABR), FIU	3,500	2006

SUPPORT FOR COLLABORATIONS	SOURCE (Collaborative Project)	PERIOD
Student Research Assistantship (Xintao Wei)	BMEI Department (Protein Engineering)	2003-04
Student Research Assistantship (Andres Parra)	Radiation Oncology, St.Jude Hosp. (Image Reg.)	2000, 2001-04
Student Research Assistantship (Xiao-Rui He)	Feinstone Center (Microarray Data Analysis)	2000-01
Student Internship (Junmin Liu)	UT Memphis (Microarray Data Analysis)	2000-01
Student Research Fellowship (Peter Dimitrov)	Feinstone Center (Microarray Data Analysis)	Spring 2000
Student Co-Op Fellowship Program (Yuan Gao)	IBM TJ Watson Center (Motif Detection)	1998-99
Student Support (J. Zhou, G. He, L. Liu)	F. E. O. Medical Inc. (Laser Eye Surgery)	Summer 1999
Student Co-Op Program (Milledge and Zheng)	IBM Supercomputing Center, Rochester, MN	2006

STUDENT MENTORING

- **Past PhD Students**:
  - Erliang Zeng (2008; First Employment: Postdoctoral Fellow, U Miami);
  - Patricia Buendia (2007; First Employment: Visiting Asst. Prof., U Miami);
  - Gaolin Zheng (2007; First Employment: Asst. Prof., North Carolina Central University);
  - Chengyong Yang (2006; First Employment: Applied Biosystems);
  - Yuan Gao (2001; First Employment: IBM TJWatson Research Center - Pattern Discovery Group; Current: Asst Prof., Computer Sciences, Virginia Commonwealth University);
  - Dimitri Kaznachev (1998; First Employment: Fannie Mae);
- **Past MS Thesis Students**: Satish Gannu, Yuan Gao, Kalyan Vavilapalli, Jianlin Zhu, Dr. Pascal Bedrossian, Dr. Rao Li, German Hernandez, Changsong Bu, Dr. Zhou Ji, Ning Xu, Dr. Xiao-rui He, Junmin Liu, Gaolin Zheng, Meera Krishnan, Yong Wang, Xintao Wei, Minchi Hu

CURRENT GRADUATE STUDENTS

Degree	Name	Year Started	Project Title/Area
Doctoral	Andres Nestor Parra	2000	Medical Image Registration
Doctoral	Michael Robinson	2006	Genomic Databases

DISSERTATION COMMITTEES

Degree	Name	Year	Area of Dissertation	Department/University
Doctoral	George Connor	1993	Statistics	Math Sciences / U Memphis
Doctoral	Anita Burris	1993	Graph Theory	Math Sciences / U Memphis
Doctoral	Firasath Ali	1994	Combinatorics	Math Sciences / U Memphis
Doctoral	Lubomir Soltes	1995	Graph Theory	Math Sciences / U Memphis
Doctoral	Jiaxiang Zhao	1997	Differential Equations	Math Sciences / U Memphis
Doctoral	Dimitri Kaznachev	1998	Neural Networks	Computer Science / U Memphis
Doctoral	Rao Li	1999	Graph Theory	Math Sciences / U Memphis
Doctoral	Fernando Niño	2000	Evolutionary Algorithms	Computer Science / U Memphis
Doctoral	German Hernandez	2000	Evolutionary Algorithms	Computer Science / U Memphis
Doctoral	David Weinreich	2000	Graph Theory	Math Sciences / U Memphis
Doctoral	Yuan Gao	2001	Bioinformatics	Computer Science / U Memphis
Doctoral	Congjun Yang	2001	Databases	Computer Science / U Memphis
Doctoral	Jun Deng	2001	Computational Chemistry	Chemistry / U Memphis
Doctoral	Anna Østlin	2001	Computational Biology	Computer Science / Lund U, Sweden
Doctoral	Daniel Cazalis	2007	Automata Theory	Computer Science / FIU
Doctoral	Wei Peng	2008	Data Mining	Computer Science / FIU
Doctoral	Jason Somarelli	Current	Genetics	Biology / FIU
Doctoral	Deepak Balasubramanian	Current	Molecular Biology	Biology / FIU
Doctoral	Jiali Wang	Current	Biomedical Engineering	Biomedical Engineering / FIU
Doctoral	Ahmed Elshahat	2008	Finance Optimization	Business / FIU
Doctoral	Medha Bhadkamkar	Current	Storage Layout	Computer Science / FIU
Doctoral	Selim Kelayci	Current	Software Engineering	Computer Science / FIU