

G. N. SRINIVASA PRASANNA

Work Address:

Indian Institute of Information Technology
26/C, Hosur Road, Electronics City
Opposite Infosys Technologies, Bangalore 560100

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No 7, SriRama Krupa,
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EDUCATION

Massachusetts Institute of Technology

Cambridge, MA

Degree: PhD (EECS) Feb 1991

Advisors: Prof. B. R. Musicus, Prof. A. Agarwal

Parallel Processing: Hierarchical compilation of macro dataflow graphs for shared memory multiprocessors.

Degree: MS (EECS) Feb 1986

Advisor: Prof. W.F. Schreiber

High Definition Display Electronics: Developed analog hardware for a HDTV display system.

Indian Institute of Technology, Kanpur

Kanpur, India

Degree: B.Tech (EE) June 1983

President's Gold Medalist

PROFESSIONAL EXPERIENCE

INDIAN INSTITUTE OF INFORMATION TECHNOLOGY 2004-Present (Professor)

Research and Teaching in various aspects of Information Technology:

- **Supply Chain Management:** Have developed novel ways to represent uncertainty in algorithms, coupling it with Shannon Information Theory. Quantitative estimates of input and output information can be provided for a variety of algorithms. The results applied to Supply Chain Management results in natural, more intuitive and robust specification of forecast uncertainty, compared to existing approaches. This is being productized currently.
- **Robotics/Electromechanical Systems:** Have created a theoretical basis for integrating the fields of mechanism design and electrical machinery, offering new ways to optimize dynamics of machinery partially independent of the kinematics.
- **Real Time Search:** Have extended classical search techniques towards multi-agent distributed queries.
- **Fault Tolerant/Highly Available information infrastructures:** Am developing a course on all aspects of Highly Available Information Technology Infrastructures, with emphasis on inter-layer interactions. Multi-layer interactions at application, middleware, database, network and storage layers are being discussed. A seminar course for students/industry professionals is being devised.
- **Powerline Communication:** Have made advances in modeling and design of very high speed powerline networking infrastructure – including advances in radiation modeling of random structures, modeling of random circuits, etc. The results hold promise of unlocking the potential of the MV grid for communication, providing an excellent 2nd layer backhaul medium worldwide.
 - The project was adjudged the best Electronics Project in the South India in a nationwide competition by Agilent Technologies.
- **Combinatorics:** Together with our students, we have devised a combinatorial game, chess being played backwards in time.

- **Computational Linguistics:** Together with Prof Donald Knuth, we have researched and rediscovered amazing contributions to classical combinatorial problems, like chess playing in our classics of Sanskrit literature. Knuth and Smith have now determined that the oldest known solution to the Knights tour problem is known now to be from India.

Recent Publications (complete list on request)

Book and Book Chapters

1. Applied Algorithmics, in preparation now 250 pages available as draft PDF.
2. Abhilasha Aswal and G.N. Srinivasa Prasanna, Computational complexity of capacity planning problems under uncertainty, Book Chapter in IAENG Transactions on Engineering Technologies Volume 4 - Special Edition of IMEC 2010, American Institute of Physics, 2011.
3. Abhilasha Aswal and G.N. Srinivasa Prasanna, A robust approach to Inventory Optimization Under Uncertainty, Book Chapter in IAENG Transactions on Engineering Technologies Volume 3 - Special Edition of IMEC 2009, American Institute of Physics, 2009
4. Aswal, A., Prasanna, G. N. Srinivasa, A Primal-Dual Iterative Scheme for solving Capacity Planning Problems under Uncertainty, IAENG Transactions on Engineering Technologies Volume 4, 2010, published by American Institute of Physics

Recent Publications

1. Shreya Malani, Sreenidhi T, G N Srinivasa Prasanna, "A Simulated Annealing based approach for solving SplitSearch", ORSI January 2012, Kolkata, India
2. Sunil Kumar Vuppala and G N Srinivasa Prasanna, "Optimal Operational Schedule of Appliances with Energy Comfort Trade off in Smart Grid", ORSI January 2012, Kolkata, India
3. Chandrasekhar Prabala and G N Srinivasa Prasanna, "Demand Driven Transport under Large Demands", INFORMS Annual Meeting, November 2011, Charlotte, US
4. G N Srinivasa Prasanna, Abhilasha Aswal and Sunil Vuppala, "Smart Grid: Optimization Methods for Demand Response Systems", INFORMS Annual Meeting, November 2011, Charlotte, US
5. Akanksha Saxena, Peravali Nagadeepthi, G N S Prasanna, "Output Analysis of Supply Chain N/w Design by Linear & Nonlinear Dimensionality Reduction techniques", INFORMS Annual Meeting, November 2011, Charlotte, US
6. Abhilasha Aswal, Ganesh Perumal, G N S Prasanna, "On estimating constraints for robust optimization of supply chains", INFORMS Annual Meeting, November 2011, Charlotte, US
7. Abhilasha Aswal, Ganesh Perumal M and G N Srinivasa Prasanna, "Infrastructure in Financial Precision: Theory and Simulation", Doctoral Colloquium of IDRBT Hyderabad, September 2011, Hyderabad, India.
8. P Chandrashekar and G. N. Srinivasa Prasanna, Dynamic Dial-A-Ride Problem under large demands, Proc MIC 2011, July 25-28, Udine Italy
9. Abhilasha Aswal and G. N. Srinivasa Prasanna, "New Vistas in Supply Chain Policy Making under Uncertainty", SetLabs Briefings, Volume 8, No. 1: Business Platforms for Next-Generation Enterprise Packages; 2010

10. Chandrasekhar Prabala, G. N. Srinivasa Prasanna and Sunil Kumar Vuppala, "Demand Driven Transport in Developing Nations: Pareto Tradeoffs", INFORMS Annual Meeting 2010; November 7-10 2010; Austin, Texas
11. Abhilasha Aswal, G. N. Srinivasa Prasanna, Inventory Optimization with Correlated Uncertainty, INFORMS Annual meeting, November 2010
12. G. N. Srinivasa Prasanna, The relational algebra of constraint sets in Robust Optimization INFORMS Annual meeting, November 2010
13. G. N. Srinivasa Prasanna, Abhilasha Aswal and Mamta Sharma, N-Dimensional Volume Estimation of Convex Bodies: Algorithms and Applications, 24th European Conference on Operational Research, July 2010
14. Abhilasha Aswal, G. N. Srinivasa Prasanna and Sheela Siddappa, Estimating Correlated Constraint Boundaries from timeseries data: The multi-dimensional German Tank Problem, 24th European Conference on Operational Research, July 2010
15. Abhilasha Aswal and G. N. Srinivasa Prasanna, Computational complexity of capacity planning problems under uncertainty, IAENG International Conference on Operations Research, Hong Kong, March 2010
16. G. N. Srinivasa Prasanna, Electrical Mechanisms (EMECS): Design Methods and Properties NaCoMM, December 2009
17. Abhilasha Aswal and G. N. Srinivasa Prasanna, A New, Intuitive and Industrial Scale Approach towards Uncertainty in Supply Chains, INFORMS Annual meeting, October 2009
18. Abhilasha Aswal and G.N. Srinivasa Prasanna, New framework for supply chain decision making under uncertainty: an analysis of the computational effort, 23rdEURO conference on Operational Research, July 2009.
19. Abhilasha Aswal and G. N. Srinivasa Prasanna, New Vistas in Inventory Optimization under Uncertainty, Proceedings IAENG International Conference on Operations Research, Hong Kong, March 2009.
20. Abhilasha Aswal and G.N. Srinivasa Prasanna, Coupling information theory with optimization: a new approach to robust design of supply chains, 23rd Belgian Conference on Operations Research, February 2009.
21. G. N. Srinivasa Prasanna, J. Bapat, G. Koomulil, A. Lakshmi, et al, Data Communication in the Smart Grid, Proc ISPLC 2009, Dresden, Germany
22. G. N. Srinivasa Prasanna, Electrical Mechanisms: EMECs: Design methods and Properties, Proc NaCoMM09, Durgapur, Dec 17-18, 2009.
23. Electrical Mechanisms: A merger of mechanisms and electrical machines NaCoMM, December 2007
24. Mayank Raj, Ritesh Kumar, K. R. Sarma, and G. N. Srinivasa Prasanna Aerial MV lines at VHF/UHF: A Versatile Broadband Hybrid Wireless/Wireline Channel, Proceedings International Symposium on Powerline Communication, ISPLC 2007, March 26-28, 2007 Pisa, Italy.
25. Abhilasha Aswal, Anushka, Dileep Paturu, and G. N. Srinivasa Prasanna Capacity Planning Under Uncertainty: A merger of Robust Optimization and Information Theory Applied to Supply Chain Management, Operations Research of India Annual Convention, New Delhi, Dec 2007.

26. G. N. Srinivasa Prasanna, The MV Aerial Power Grid at VHF/UHF rivals Fiber in Capacity, Proceedings OFC 2006, March 2006, Anaheim, CA.
27. G. N. Srinivasa Prasanna, et al. Aerial MV lines at VHF/UHF: Quasi-TEM Analysis and Experimental Results, Proceedings International Symposium on Powerline Communication, ISPLC 2006, March 26-29, 2006 Florida, USA.

Recent Awards

1. "Optimization under uncertainty" project won "outstanding Innovation" award at Bangalore It. Biz 2011 (http://www.bangaloreit.biz/IT_2011/index.php)
2. "Big Kahuna" project runner up at the Google Product Prodigy 2009
3. Baliga Award 2007 from IETE
4. Powerline Communication: Finalist for Agilent India Awards, 2007
5. Inverse Chess listed amongst top 100 Indian Innovative Companies by NASSCOM for 2007.
6. Powerline Communication listed amongst top 100 Indian Innovative Companies by NASSCOM for 2007.

Recent Patents (all filed under Patent Co-operation Treaty (PCT))

1. Motion Control Using Electromagnetic Forces, US Patent No 7,348,754
2. Motion control using electromagnetic forces, US Patent 7,733,050
3. Novel Supply Chain algorithms in the presence of uncertainty, nationally filed in USA, EPO, and India.
 - European Patent Application EP1922677
 - WIPO Patent Application WO/2007/007351
4. A Computer Implemented Decision Support Method and System, search phase under PCT
 - WIPO Patent Application WO/2010/004587
5. Decision Support Systems under uncertainty, search phase under PCT
 - WIPO Patent Application WO/2010/004585
6. New vistas in Inventory Optimization under Uncertainty, International patent application PCT/IN2010/000136 (filed March 9, 2009).
7. High Speed Communication on MV grid at VHF/UHF, Indian Patent Application.
8. Inverse chess, United States Patent Application 20080197569, European Patent Application EP1919577 (filed July 7, 2005).
9. A method and system for a real-time distributed search, International patent application PCT/IN2006/000238 (filed July 7, 2005).
10. Powerline communication system at vhf/uhf, International patent application PCT/IN2008/000187 (filed March 26, 2007).

11. Broadband hf/vhf/uhf communication on power lines, International patent application PCT/IN2006/000223 (filed June 29, 2005).

Program Committee Memberships

Technical Program Committee (Communications)

- ISPLC 2005 - Present
- Globecom 2007 - Present
- ICC 2008 - Present

Technical Programme Committee (Analytics)

- Senior Member IEEE
- Member ACM
- Informs (Session Chair)
- CASE 2008

Organizing Committee

- WWW 2011, Hyderabad, India

Reviewer

1. Referee for Algorithmica, Computers and Electrical Engg., Computer Networks
2. JSAC(Special Issue on Optical Networks and Smart Grid)
3. IEEE Transactions on Parallel and Distributed Systems, Networks 2000

PRIOR PROFESSIONAL EXPERIENCE

LUCENT TECHNOLOGIES (1992-2003):

- 5ESS LINE CARD DEVELOPMENT
- OPTICAL NETWORKING OPTIMIZATION
- Further details on request