

Siva Kumar Gorantla

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EDUCATION

University of Illinois, Urbana Champaign, Urbana, IL.

- Ph.D., Electrical and Computer Engineering. (GPA: 4.0/4.0) May 2012(expected)
Advisor: Prof. Todd Coleman
- Applied M.S., Statistics. May 2012(expected)
- M.S., Electrical and Computer Engineering. 2007-2009

Indian Institute of Technology Madras, Chennai, India.

- B.Tech., Electrical Engineering (GPA: 9.40/10.0) 2003-2007

RESEARCH INTERESTS

- Information theory and its interplay with stochastic control and team-decision theory.
- Statistical Learning, inference and prediction. Specifically in understanding the dynamics of Ads and Markets.
- Probability Theory and Optimization.

COMPUTING SKILLS

Java, C/C++ , R, MATLAB.

DISTINCTIONS

- **James M. Henderson** Award for academic excellence at University of Illinois, Urbana-Champaign **2008**
- **S.Subramanian Award** (Institute Merit Prize) from IIT Madras, for securing Highest GPA among all engineering disciplines for the academic year 2003-04. **2004**
- Merit Certificate from Ministry of Human Resources and Development (**HR&D**), Govt. of India. **2003**
- Secured **State 1st** Rank among 150,000 students in State's Engineering Entrance Exam (**EAMCET**) **2003**
- Secured **All India Rank 7** among 650,000 students in All India Engineering Entrance Exam (**AIEEE**) **2003**

WORK EXPERIENCE

Adchemy Inc.

Research Intern, May'10 - Aug'10. & *Research Consultant*, Oct'10 - Dec'10.

- 1 (Search Engine Marketing) Statistical Learning Techniques for Ad-Campaign Bid Management.
Implemented and tested data-driven algorithms to optimize bids and increase ROI on Google ad-campaigns.
- 2 (Search Intent Marketing) Intent mining and Relationship mining for building Adchemy IntentMap™.
Currently available on Microsoft adCenter as part of recent [Adchemy-Microsoft partnership](#).

Coordinated Science Lab (CSL), UIUC.

Aug 2007 – Present

Graduate Researcher, Advisor: Prof. Todd Coleman.

- 1 Information theory and its interplay with control theory and decision theory.
 - (a) Design and stability analysis of real-time coding schemes for communication with feedback.
 - (b) Understanding the common goal of a team of interacting agents by observing their behavior.
- 2 Broadcasting information using timings in a noisy environment.

Laboratory for Information and Decision Systems, LIDS, MIT.

Jun 2009 – Aug 2009

Visiting Research Asst. at MIT, Mentor: Prof. Muriel Medard.

- 1 Coding strategies with Unequal Error Protection for communication with feedback.
- 2 Network coding for timing channels.

Teaching Assistant, UIUC

Information Theory, Adv. Digital Communications, Probability and Engg. Applications

PUBLICATIONS

Journals

- S. K. Gorantla, B. Nakiboglu, T. P. Coleman, L. Zheng, “Multi-layer Bit-wise Unequal Error Protection for Variable Length Blockcodes with Feedback”, submitted to IEEE Trans. on Info. Theory, Jan 2011.
- S. K. Gorantla, T. P. Coleman, “Information-Theoretic Viewpoints on Optimal Causal Coding-Decoding Problems”, submitted to IEEE Trans. on Info. Theory, Jan 2011.
- S. K. Gorantla, S. Kadloor, N. Kiyavash, T.P. Coleman, I. Moskowitz, M. Kyang, “Characterizing the Efficacy of the NRL Network Pump in Mitigating Covert Timing Channels”, to be appeared in IEEE Trans. on Info. Forensics and Security (TIFS), Feb 2012.
- S.K. Gorantla and T.P.Coleman, “Intrinsic Methods in Message Point Communicaton achievability”, in prep.

Conference

- S. K. Gorantla and T. P. Coleman, “Equivalence between Reliable Feedback Communication and Nonlinear Filter stability”, appeared in IEEE *Intl. Symp. on Info. Theory* (ISIT) , St. Petersburg, Russia, Aug 2011.
- S. K. Gorantla and T. P. Coleman, ”On Reversible Markov Chains and Maximization of Directed Information”, published in IEEE *Intl. Symp. on Info. Theory* (ISIT) , Jan 2010 (also appeared at a special session on control and communications, *Info. Theory and Appln.*(ITA) Annual Workshop, San Diego, CA, Feb 2010).
- S. K. Gorantla, B. Nakiboglu, T. P. Coleman, L. Zheng “Bit-wise Unequal Error Protection for Variable Length Blockcodes with Feedback”, published in *Intl. Symp. on Info. Theory* (IEEE-ISIT), Austin, Texas, June 2010.
- S. K. Gorantla, T. P. Coleman, “A Stochastic Control Approach to Coding with Feedback over Degraded Broadcast Channels”, published in *49th IEEE Conference on Decision and Control* (CDC), Dec 2010.
- H. Ebeid, S. K. Gorantla, T. P. Coleman, “A Necessary Condition for Reliable Communication With Feedback Based Upon Lyapunov Exponents of Dynamical Systems” in *Military Comm. Conf.*, San Jose, Oct 2010.
- S. K. Gorantla, S. Kadloor, T.P. Coleman, N. Kiyavash,I. Moskowitz, M. Kyang, “Directed Information and the NRL Network Pump” in *Intl. Symp. on Info. Theory and its Applications* (ISITA), Taiwan, Oct 2010.
- S. K. Gorantla, Muriel Medard, T. P. Coleman, “Network Coding for Timing Channels”, in preparation.

RELEVANT COURSE WORK

Stochastic Processes, Information Theory, Stochastic Control,
 Statistical Learning, ‘Prediction, Learning & Games’,
 Probability & Measure Theory I & II, Stochastic Simulation, Linear algebra & Optimization, Operations Research.
 Time Series Analysis, Applied Regression & Design, Methods of Applied Statistics, Applied Econometrics.

OTHER PROJECTS

Relationship Mining for IntentMap May 2010-Dec 2010
 IntentMapTM captures customers’ intents and used to improve scalability on ad-campaigns. Developed various metrics and algorithms than can a) find relationship strengths among intents, b) build and scale an IntentMap from unstructured datasets (e.g., user queries) and structured datasets (e.g., wikipedia, freebase).

Inference on High Frequency Order-Book data March 2011-Dec 2011
 Built inference models for Multi-dimensional Point Process data (stock exchanges) to capture causal relationships between exchanges. Implemented all modules of parameter estimation for point process models in C++ .

Adcampaign Bid Management May 2010-Dec 2010
 Automated bids for keywords using statistical learning techniques with an objective of improving ROI on Google ad-Campaigns. Built models based upon past performance indices and linguistic features. Monitered and improved ROI on a test campaign with \$1000/day budget.

Optimal Sensor Selection in smart home appliances for minimizing power consumption.

Statistical learning Techniques and Time Series Analysis on various benchmark data sets

Econometric Analysis of cricketer’s career.

Simulations: (a) Importance Sampling in rare-event simulations for pricing Deep-Out-Of-The-Money Options.
 (b) Monte Carlo Simulation for Pricing Asian and European Options

For a complete list of projects and code, please see <http://www.ifp.illinois.edu/~sgorant2/projects.html>