

SRINIVASAN VENKATRAMANAN

CONTACT INFO

Biocomplexity Institute of Virginia Tech,
1015 Life Sciences Circle (Room 305-2),
Blacksburg, VA - 24061

vsriniv@bi.vt.edu
sriniv.venkat@gmail.com
Ph: +1-540-231-0070
www.srinivv.com/research

RESEARCH INTERESTS

Stochastic processes, Agent-based modeling, Differential Equations, Optimization, Optimal Control, Network Science

RESEARCH DOMAINS

Network Epidemiology, Computational Modeling, Complex Systems, Social Information Networks, Academic Social Networks, Mobile Opportunistic systems

EDUCATION

Aug. 2008 - April 2014

Ph.D.

Department of ECE, Indian Institute of Science, Bangalore

Advisor: Prof. Anurag Kumar

Thesis Title: Influence Dynamics on Social Networks

CGPA: 7/8

Developed novel applications of traditional mathematical models to study dynamics of influence spread on online social networks.

Aug. 2004 - June. 2008

B.E. (ECE)

College: College of Engineering Guindy, Anna University, Chennai.

Thesis Title: Cooperative Diversity in Wireless Sensor Networks

CGPA: 9.12/10

Obtained heuristic algorithms for efficient relay selection for forwarding in wireless sensor networks.

PROFESSIONAL EXPERIENCE

Dec 2017 -

Computational Health Data Scientist

Network Dynamics and Simulation Science Laboratory, Biocomplexity Institute of Virginia Tech.

Mentor: Bryan Lewis, MPH, PhD

Responsible for assisting and leading applied research projects using computational modeling, HPC simulations and Big Data analysis to address public health policy questions especially involving infectious disease dynamics.

Feb 2015 - Nov 2017

Postdoctoral Associate

Network Dynamics and Simulation Science Laboratory, Biocomplexity Institute of Virginia Tech.

Mentor: Prof. Anil Vullikanti

Responsible for designing, analyzing and implementing provable algorithms for analyzing complex networks and graph dynamical systems, in particular those arising in the study of large socio-technical, biological and information systems.

May 2014 - Nov 2014

Research Assistant

Department of Information Engineering, Chinese University of Hong Kong.

Mentor: Prof. Dah Ming Chiu

Responsible for developing and testing mathematical models for structure, dynamics and evolution of data arising from large scale academic social networks.

May 2007 - Aug 2007

Student Intern

Bell Research Labs, Bangalore, India.

Involved in design and development of cloud storage and streaming of media content for mobile applications (Network iPod).

Computer Skills

Programming: C++, Python, Matlab, NetLogo

Conference/Workshop Publications

1. Srinivasan Venkatramanan, Sichao Wu, Bowen Shi, Achla Marathe, Madhav Marathe, Stephen Eubank, Lalit Sah, A.P. Giri, Luke Colavito, Nitin S, Sridhar V, Asokan R, Rangaswamy Muniappan, George Norton, and Abhijin Adiga, *"Towards Robust Models of Food Flows and Their Role in Invasive Species Spread"*, accepted to appear in IEEE International Conference on Big Data (IEEE Big Data), 2017.
2. Farzaneh Sadat Tabataba, Milad Hosseinipour, Bryan Lewis, Foroogh Sadat Tabataba, Srinivasan Venkatramanan, Dave Higdon, Jiangzhuo Chen, and Madhav Marathe, *"Epidemic Forecasting by Combining Agent-Based Models and Smart Beam-Particle Filtering Framework"*, IEEE International Conference on Data Mining (ICDM) short paper, 2017
3. Venkatramanan S, Chen J, Gupta S, Lewis B, Marathe M, Mortveit H, Kumar VS Anil, *"Spatio-temporal optimization of seasonal vaccination using a metapopulation model of influenza"*, IEEE International Conference on Healthcare Informatics (ICHI), 2017
4. Wu Yan, Srin Venkat, and Dah Ming Chiu, *"Get To the Top and Stay There: A Study of Citation Rank Dynamics in Academia"*, Proceedings of the 25th International Conference Companion on World Wide Web (BigScholar), 2016
5. Abhijin Adiga, Srinivasan Venkatramanan, Anil Vullikanti, *"To delay or not: Temporal Vaccination Games on Networks"*, IEEE INFOCOM 2016
6. Wu Yan, Srinivasan Venkatramanan and Dah Ming Chiu, *"Research Collaboration and Topic Trends in Computer Science - An Analysis Based on UCP Authors"*, Proceedings of the 25th International Conference Companion on World Wide Web (SAVE-SD), 2015
7. Qiu Fang Ying, Srinivasan Venkatramanan and Dah Ming Chiu, *"Modeling and Analysis of Scholar Mobility on Scientific Landscape"*, Proceedings of the 24th International Conference Companion on World Wide Web (BigScholar), 2015
8. Srinivasan Venkatramanan and Anurag Kumar, *"Competition for Content Spread over Multiple Social Networks"*, Workshop on Social Networks in Science and Engineering (SCINSE'14), co-held with COMSNETS 2014 (Best presentation award)
9. Eitan Altman, Parmod Kumar, Srinivasan Venkatramanan and Anurag Kumar, *"Competition over Timeline in Social Networks"*, Workshop on Social Network Analysis and Algorithms (SNAA), co-held with IEEE/ACM ASONAM 2013
10. Srinivasan Venkatramanan and Anurag Kumar, *"Co-evolution of Content Popularity and Delivery in Mobile P2P Networks"*, IEEE INFOCOM mini-Conference, 2012
11. Srinivasan Venkatramanan and Anurag Kumar, *"Information Dissemination in Socially Aware Networks under the Linear Threshold model"*, National Conference on Communication(NCC), 2011

Journals

1. Srinivasan Venkatramanan, Bryan Lewis, Jiangzhuo Chen, Dave Higdon, Anil Vullikanti, Madhav Marathe, *"Using data-driven agent-based models for forecasting emerging infectious diseases"*, accepted to appear in Elsevier Epidemics, 2017
2. Farzaneh Sadat Tabataba, Prithwish Chakraborty, Naren Ramakrishnan, Srinivasan Venkatramanan, Jiangzhuo Chen, Bryan Lewis and Madhav Marathe, *"A Framework for Evaluating Epidemic Forecasts"*, accepted to appear in BMC Infectious Diseases, 2017

3. Wu Yan, Srinivasan Venkatramanan and Dah Ming Chiu, “*Research collaboration and topic trends in Computer Science based on top active authors.*”, PeerJ Computer Science 2:e41, 2016
4. Srinivasan Venkatramanan and Anurag Kumar, “*Co-Evolution of Content Spread and Popularity in Mobile Opportunistic Networks.*”, IEEE Transactions on Mobile Computing 13(11): 2498-2509, February 2014

Technical Reports

1. Wu Yan, Srinivasan Venkatramanan, Dah Ming Chiu, “*A Population Model for the Academic Ecosystem*”, arXiv:1503.08312
2. Srinivasan Venkatramanan and Anurag Kumar, “*Influence Spread in Social Networks: A Study via a Fluid Limit of the Linear Threshold Model*, arXiv:1405.7096
3. Srinivasan Venkatramanan and Anurag Kumar, “*New Insights from an Analysis of Social Influence Networks under the Linear Threshold model*”, arXiv:1002.1335

Invited Talks/Posters

1. “*Resource optimization problems using a mathematical model of influenza*”, talk given at the 6th Annual MIDAS Outreach Conference, Harvard T.H. Chan School of Public Health, November 2017
2. Srinivasan Venkatramanan et al., “*Hybrid models for ecological and anthropogenic drivers of pest invasion: Case study of Tuta Absoluta in Nepal*”, presented at International Conference on Biodiversity, Climate Change Assessment and Impacts on Livelihood, Kathmandu, Nepal, January 2017
3. Srinivasan Venkatramanan et al., “*Towards an Integrated Network-based Approach to Modeling the Dynamics of Invasive Plant Pests*”, poster presented at KDD 2016 Workshop on Data Science for Food, Energy and Water, San Francisco, August 2016
4. “*Modeling in the Time of Ebola: Using HPC Simulations to Understand Infectious Disease Dynamics*”, talk given at IISc. Bangalore and IIT Madras, February 2016
5. “*Ebola Forecasting Challenge: Team Virginia Tech*”, talk given at NIH/RAPIDD Ebola Forecasting Challenge workshop, Bethesda, February 2016
6. “*Calibration and Forecasting Framework for Infectious Diseases*”, poster presented at International Symposium for Next Generation Infrastructure (ISNGI), Washington D.C., September 2015
7. “*Delay-Cost Optimal Coupon Delivery in Mobile Opportunistic Networks*”, talk at the High Dimensional Network Analytics Workshop, IISc. Bangalore, Dec 2013
8. “*Spread of Content and Interest in Mobile Opportunistic Networks*”, talk at the International Conference on Networks in Biology, Social Sciences and Engineering, held as part of the IISc Mathematics Initiative (IMI) Network Year, IISc Bangalore, June 2012
9. “*Information Dissemination in Social Networks under the Linear Threshold model*”, talk at the Workshop on Recent trends in Social Networks: Algorithms, Models and Learning, TIFR, Mumbai, Jan 2011
10. “*Influence Spread in Social Networks*”, poster presented at TechVista 2010 organized by Microsoft Research, India, Jan 2010

Mentoring

- Kingsley Nwosu - Undergrad intern (Summer 2017)
Project: Computational Methods for Effective Stockpile Allocation during Epidemics
- Asia Taylor - Undergrad intern (Summer 2017)
Project: Assessing the resolution of Influenza surveillance datasets in the United States

Responsibilities

- TPC Member: COMSNETS 2015, COMSNETS 2016
- Reviewer: IEEE TMC, IEEE TIT, Elsevier TCS, PLOS Currents: Outbreaks
- Organizing Committee:
 - Indo-French Workshop on New Avenues for Network Models, IISc. Bangalore, 2014
 - ICTS School and Workshop on Network Science in Electrical Engineering and Computer Science, IISc. Bangalore, 2012

Miscellaneous Achievements

- Runner up - BDMM2017 Hackathon (*Project: Medi-Sieve-Towards Healthcare Fraud Detection*), co-held with IEEE BigData 2017, Boston, Dec 2017
- Among top three teams in NIH/NSF RAPIDD Ebola Forecasting Challenge, Sep-Dec 2015
- 6th out of 225 teams - Event Recommendation Challenge organized by Kaggle.com, Feb 2013
- Runner up - NTL Robot Challenge, organized by NASA Tournament Lab and Topcoder, June 2012

References

Prof. Madhav Marathe (Virginia Tech) *mmarathe@bi.vt.edu*

Prof. Anil Vullikanti (Virginia Tech) *akumar@bi.vt.edu*

Bryan Lewis, MPH, PhD (Virginia Tech) *bryanlewis@bi.vt.edu*

Prof. Dah Ming Chiu, (Chinese Univ. of Hong Kong) *dmchiu@ie.cuhk.edu.hk*

Prof. Anurag Kumar, Indian Institute of Science *anurag@ece.iisc.ernet.in*