

# B. Aditya Prakash

Assistant Professor  
Department of Computer Science  
Virginia Tech.  
114 McBryde Hall (0106), Blacksburg VA 24061 USA

Office: Torgersen Hall, 3160F  
Phone: +1-540-231-0906  
Email: badityap@cs.vt.edu  
Web: <http://www.cs.vt.edu/~badityap>

---

## RESEARCH INTERESTS

I am broadly interested in **Data Mining, Applied Machine Learning** and **Databases** with emphasis on solving **big-data** problems in networks and time-series. Some of the research questions I answer deal with understanding and managing efficiently, dynamical mechanisms (like propagation) on networks, occurring across natural, social and technological systems. My research combines theoretical analysis of models, developing efficient algorithms and empirical studies on tera-byte scale data. I have also interests in time-series modeling and mining, and anomaly detection.

## EDUCATION

### Carnegie Mellon University, Pittsburgh PA, USA

PhD. in Computer Science August 2007 - September 2012  
– Committee: Prof. Christos Faloutsos (Advisor, Chair), Prof. Roni Rosenfeld (CMU), Prof. David Andersen (CMU), Prof. Jon Kleinberg (Cornell University)  
MS in Computer Sc., Aug 2011

### Indian Institute of Technology - Bombay, INDIA

B.Tech, Computer Science and Engineering July 2003 - May 2007  
– Advisor: Prof. S. Sudarshan

## EMPLOYMENT

### Virginia Tech., Blacksburg VA, USA

*Assistant Professor*, Department of Computer Science December 2012 - present  
*Member*, Discovery Analytics Center (DAC)

### Yahoo! Research, Santa Clara CA, USA

*Summer Research Intern*, Algorithms and Data Mining Group June-August 2011

### Microsoft Research, Redmond WA, USA

*Summer Research Intern*, Knowledge Tools Group June-August 2009

### Sprint Research Labs, Burlingame CA, USA

*Summer Research Intern*, Networks and Mining Group May-July 2008

### University of British Columbia, Vancouver BC, Canada

*Summer Research Intern*, Database Group May-July 2006

### SERC, Indian Institute of Science, Bangalore, India

*Summer Research Intern*, Database Research Lab May-July 2005

## SELECTED ACHIEVEMENTS

- ◇ Received the **NSF CAREER** award. (2018)
- ◇ Named as one of **AI's 10 to Watch** by IEEE Intelligent Systems. (2017)
- ◇ Selected for **best papers of ICDM 2017**, IEEE Intl. Conf. on Data Mining. (2017)

- ◇ Received the **Facebook Faculty Gift Award**. (2015)
- ◇ Received the **SIAM Early Career Travel Award**, SDM—SIAM Data Mining Conf. (2013 and 2015)
- ◇ Selected for **best papers of ICDM 2012**, IEEE Intl. Conf. on Data Mining. (2012)
- ◇ Received the **CIKM Best Paper Award (all three tracks) 2012**, ACM Conf. on Information and Knowledge Management. (2012)
- ◇ Received the **ACM SIGKDD Travel Award**. (2012)
- ◇ Selected for **best papers of ICDM 2011**, IEEE Intl. Conf. on Data Mining. (2011)
- ◇ Awarded the **CMU SCS Graduate Fellowship**. Received perfect GRE and TOEFL scores. (2007)
- ◇ Secured **All India Rank (AIR) 58** out of 172, 000 candidates in the IIT - Joint Entrance Examination (IIT JEE) (2003)
- ◇ Was placed in the **top 0.1%** of students in NSEP & NSEC and hence selected for **Indian National Physics and Chemistry Olympiads (InPhO & InChO)** (2003)
- ◇ Was awarded the **Jawaharlal Nehru Science and Engg. Scholarship** by Govt. of India. (2003)
- ◇ Was awarded the prestigious **Kishore Vaigyanik Protsahan Yojana (KVPPY) Fellowship (Young Scientist Encouragement Fellowship)** by the Department of Science & Technology, Govt. of India and administered by Indian Institute of Science, Bangalore. (2001)  
webpage - <http://www.iisc.ernet.in/kvpy/>
- ◇ Was awarded the prestigious **National Talent Search Examination (NTSE) Scholarship** by NCERT (New Delhi). (2001)

## PUBLICATIONS

### *Theses*

1. B. Aditya Prakash. Understanding and Managing Propagation on Large Networks: Theory, Algorithms and Models. *PhD. Thesis, CMU, 2012.*
2. B. Aditya Prakash. On Query Optimization Issues in Fine-Grained Access Control. *Senior Thesis, IIT-Bombay, 2007.*

### *Book*

1. V. S. Subrahmanian, Michael Ovelgonne, Tudor Dumitras and B. Aditya Prakash. *The Global Cyber-Vulnerability Report*. Springer. DOI: 10.1007/978-3-319-25760-0. 2015.

### *Book Chapters*

1. B. Aditya Prakash. Graph Mining for Cyber Security. In S. Jajodia et al. (eds.), *Cyber Warfare—Building the Scientific Foundation*, Advances in Information Security 56. 287-306. Springer. DOI: 10.1007/978-3-319-14039-1. 2015

### *Invited Articles*

1. B. Aditya Prakash. Prediction using Propagation: From Flu-Trends to Cyber Security. *IEEE Intelligent Systems Magazine*, vol 31, Issue 1, 84-88, 10.1109/MIS.2016.1. Jan-Feb 2016 Issue.
2. B. Aditya Prakash. Propagation and Immunization in Large Networks. *Crossroads: The ACM Magazine for Students - Big Data Issue* 19, 1 (September 2012), 56-59. DOI=10.1145/2331042.2331059. 2012.

*Refereed Journals* (student authors advised by me marked with \*)

1. Sorour Amiri\*, Liangzhe Chen\* and B. Aditya Prakash. Efficiently Summarizing Attributed Diffusion Networks. *Data Mining and Knowledge Discovery Journal (DAMI)—ECML/PKDD Journal Track, Dublin*. 2018. (to appear) *Impact Factor: 2.87*.
2. Sorour Amiri\*, Liangzhe Chen\* and B. Aditya Prakash. Automatic Segmentation of Dynamic Network Sequences with Node Labels. *IEEE Transactions on Knowledge and Data Engineering (TKDE)*. 2018 (to appear). *Impact Factor: 2.067*
3. Bijaya Adhikari\*, Yao Zhang\*, Sorour E. Amiri\*, Aditya Bharadwaj, and B. Aditya Prakash. Propagation based Temporal Network Summarization. *IEEE Transactions on Knowledge and Data Engineering (TKDE)*. 2018. *Impact Factor: 2.067*
4. Yasuko Matsubara, Yasushi Sakurai, B. Aditya Prakash, Lei Li and Christos Faloutsos. Non-linear Dynamics of Information Diffusion in Social Networks. *ACM Transactions on the Web (TWEB)*. 2017. *Impact Factor: 2.414*
5. Michael Ovelgonne, Tudor Dumitras, B. Aditya Prakash, V. S. Subrahmanian and Benjamin Wang\*. Understanding the Relationship between Human Behavior and Susceptibility to Cyber-Attacks: A Data-Driven Approach. *ACM Transactions on Intelligent Systems and Technology (TIST)*. 2017. *Impact Factor: 1.252*
6. Yao Zhang\*, Abhijin Adiga, Sudip Saha, Anil Vullikanti and B. Aditya Prakash. Near-optimal Algorithms for Controlling Propagation at Group Scale on Networks. *IEEE Transactions on Knowledge and Data Engineering (TKDE)*. 2016. *Impact Factor: 2.067*
7. Larry Holder, Maleq Khan and others. Current and Future Challenges in Mining Large Networks. *SIGKDD Explorations*. Vol. 18, Issue 1. 2016. *Impact Factor: 6.48*
8. Chen Chen, Hanghang Tong, B. Aditya Prakash, Tina Eliassi-Rad, Michalis Faloutsos and Christos Faloutsos. Eigen-Optimization on Large Graphs by Edge Manipulation. *ACM Transactions on Knowledge Discovery and Data Mining (TKDD)*. 2016. *Impact Factor: 1.68*.
9. Chen Chen, Hanghang Tong, B. Aditya Prakash, Charalampos Tsourakakis, Tina Eliassi-Rad, Christos Faloutsos and Duen Horng Chau: Node Immunization on Large Graphs: Theory and Algorithms. *IEEE Transactions on Knowledge and Data Engineering (TKDE)*, vol 28, issue 1, 113-126. 2016. *Impact Factor: 2.067*
10. Liangzhe Chen\*, K. S. M. Tozammel Hossain, Patrick Butler, Naren Ramakrishnan and B. Aditya Prakash. Syndromic Surveillance of Flu on Twitter Using Weakly Supervised Temporal Topic Models. *Data Mining and Knowledge Discovery Journal (DAMI)*. 2015. *Impact Factor: 2.87*.
11. Yao Zhang\* and B. Aditya Prakash. Data-Aware Vaccine Allocation over Large-Networks. *ACM Transactions on Knowledge Discovery and Data Mining (TKDD)* vol 10, 2, 1556-4681. 2015. *Impact Factor: 1.68*.
12. Evangelos E. Papalexakis, Tudor Dumitras, Duen Horng Chau, B. Aditya Prakash and Christos Faloutsos. SharkFin: Spatio-temporal mining of software adoption and penetration. *Social Network Analysis and Mining Journal*, vol 4:240. 2014.
13. B. Aditya Prakash, Jilles Vreeken, and Christos Faloutsos. Efficiently Spotting the Starting Points of an Epidemic in a Large Graph. *Knowledge and Information Systems Journal (KAIS)* vol 38, no. 1, 35-59. 2014. *Impact Factor: 2.225*.
14. Xuetao Wei, Nicholas Valler, B. Aditya Prakash, Iulian Neamtiu, Michalis Faloutsos and Christos Faloutsos. Competing Meme Propagation on Networks: A Network Science Perspective. *IEEE Journal on Selected Areas in Communication (JSAC)*, vol. 31, no. 6, 1049-1060. 2013. *Impact Factor: 4.138*.
15. B. Aditya Prakash, Christos Faloutsos: Understanding and Managing Cascades on Large Graphs. *PVLDB* 5(12): 2024-2025 (2012).

16. Xuetao Wei, Nicholas Valler, B. Aditya Prakash, Iulian Neamtii, Michalis Faloutsos and Christos Faloutsos. Competing Meme Propagation on Networks: A Case Study of Composite Networks. *ACM SIGCOMM Computer Communication Review* 42, 5, (September 2012), 5-12, 2012.
17. B. Aditya Prakash, Deepayan Chakrabarti, Michalis Faloutsos, Nicholas Valler, Christos Faloutsos. Threshold Conditions for Arbitrary Cascade Models on Arbitrary Networks. *Knowledge and Information Systems Journal (KAIS)*. 2012, doi:10.1007/s10115-012-0520-y. *Impact Factor*: 2.225.
18. Shipra Agarwal, Jayant R. Haritsa and B. Aditya Prakash. FRAPP: A Framework for high-Accuracy Privacy-Preserving Mining. *Intl. Journal on Data Mining and Knowledge Discovery (DAMI)*, Springer, vol. 18, no. 1. February 2009, Ed: Johannes Gehrke. *Impact Factor*: 2.877.

*Refereed Conferences* (student authors advised by me marked with \*)

1. Bijaya Adhikari\*, Yao Zhang\*, Naren Ramakrishnan and B. Aditya Prakash. Sub2Vec: Feature Learning for Subgraphs. *PAKDD Pacific-Asia Conference on Knowledge Discovery and Data Mining 2018, Melbourne*. *Acceptance Rate*: 8%.
2. M. Raihanul Islam, B. Aditya Prakash and Naren Ramakrishnan. Distributed Representations of Signed Networks. *PAKDD Pacific-Asia Conference on Knowledge Discovery and Data Mining 2018, Melbourne*. *Acceptance Rate*: 8%.
3. Bijaya Adhikari\*, Parikshit Sondhi, Wenke Zhang, Mohit Sharma and B. Aditya Prakash. Mining E-Commerce Query Relations using Customer Interaction Networks. *ACM WWW World Wide Web Conference 2018, Lyon*. *Acceptance Rate*: 15%.
4. Bijaya Adhikari\*, Pavan Rangudu, B. Aditya Prakash and Anil Vullikanti. Near-optimal Mapping of Network States using Probes. *SDM SIAM Data Mining Conference 2018, San Diego*. *Acceptance Rate*: 23.2%.
5. Liangzhe Chen\*, Sorour Amiri\*, and B. Aditya Prakash. Automatic Segmentation of Data Sequences. *AAAI Conference on Artificial Intelligence AAAI 2018, New Orleans*. *Acceptance Rate*: 24%.
6. Yao Zhang\*, Arvind Ramanathan, Anil Vullikanti, Laura Pullum, and B. Aditya Prakash. Data-Driven Immunization. *IEEE ICDM International Conference on Data Mining 2017, New Orleans*. *Acceptance Rate*: 8.4%. (Invited to *KAIS Journal Best Papers of ICDM*).
7. Liangzhe Chen\*, Xinfeng Xu\*, Sangkeun Lee, Sisi Duan, Alfonso G. Tarditi, Supriya Chinthavali and B. Aditya Prakash. HotSpots: Failure Cascades on Heterogeneous Critical Infrastructure Networks. *ACM CIKM Intl. Conference on Information and Knowledge Management 2017, Singapore*. *Acceptance Rate*: 20%.
8. Yao Zhang\*, Bijaya Adhikari\*, Steve Jan\* and B. Aditya Prakash. MeiKe: Influence-based Communities in Networks. *SDM SIAM Data Mining Conference 2017, Houston*. *Acceptance Rate*: 26%.
9. Bijaya Adhikari\*, Yao Zhang\*, Aditya Bharadwaj and B. Aditya Prakash. Condensing Temporal Networks using Propagation. *SDM SIAM Data Mining Conference 2017, Houston*. *Acceptance Rate*: 26%.
10. Karthik Subbian, B. Aditya Prakash and Lada Adamic. Detecting Large Reshare Cascades in Social Networks. *ACM WWW World Wide Web Conference 2017, Perth*. *Acceptance Rate*: 17%.
11. Sorour Amiri\*, Liangzhe Chen\* and B. Aditya Prakash. SnapNETS: Automatic Segmentation of Network Sequences with Node Labels. *AAAI Conference on Artificial Intelligence AAAI 2017, San Francisco*. *Acceptance Rate*: 24%.

12. Polina Rozenshtein, Aristides Gionis, B. Aditya Prakash and Jilles Vreeken. Reconstructing an Epidemic over Time. *ACM SIGKDD Intl. Conference on Knowledge Discovery and Data Mining 2016, San Francisco. Acceptance Rate: 17%*.
13. Ahsanur Rahman, Steve Jan\*, Hyunju Kim, B. Aditya Prakash and T. M. Murali. Unstable Communities in Network Ensembles. *SDM SIAM Data Mining Conference 2016, Miami. Acceptance Rate: 25%*.
14. Chanhyun Kang, Noseong Park, B. Aditya Prakash, Edoardo Serra, and V. S. Subrahmanian. Ensemble Models for Data-Driven Prediction of Malware Infections. *ACM WSDM Web Search and Data Mining Conference 2016, San Francisco. Acceptance Rate: 18.2%*.
15. Yao Zhang\*, Abhijin Adiga, Anil Vullikanti and B. Aditya Prakash. Controlling Propagation at Group Scale on Networks. *IEEE ICDM International Conference on Data Mining 2015, Atlantic City. Acceptance Rate: 8.4%*.
16. Shashidhar Sundereisan\*, Jilles Vreeken and B. Aditya Prakash. Hidden Hazards: Finding Missing Nodes in Large Graph Epidemics. *SDM SIAM Data Mining Conference 2015, Vancouver. Acceptance Rate: 14%*.
17. Sudip Saha, Abhijin Adiga, B. Aditya Prakash and Anil Vullikanti. Approximation Algorithms for Reducing the Spectral Radius to control Epidemic Spread. *SDM SIAM Data Mining Conference 2015, Vancouver. Acceptance Rate: 14%*.
18. Liangzhe Chen\*, K. S. M. Tozammel Hossain, Patrick Butler, Naren Ramakrishnan and B. Aditya Prakash. Flu Gone Viral: Syndromic Surveillance of Flu on Twitter using Temporal Topic Models. *IEEE ICDM International Conference on Data Mining, 2014, Shenzhen. Acceptance Rate: 19.53%*.
19. Yao Zhang\* and B. Aditya Prakash. Scalable Vaccine Distribution in Large Graphs given Uncertain Data. *ACM CIKM Intl. Conference on Information and Knowledge Management 2014, Shanghai. Acceptance Rate: 20%*.
20. Manish Purohit, B. Aditya Prakash, Chanhyun Kang, Yao Zhang\* and V. S. Subrahmanian. Fast Influence-based Coarsening for Large Networks. *ACM SIGKDD Intl. Conference on Knowledge Discovery and Data Mining 2014, New York City. Acceptance Rate: 14.6%*.
21. Fang Jin, Rupinder Khandpur, Nathan Self, Edward Dougherty, Feng Chen, B. Aditya Prakash and Naren Ramakrishnan. Modeling Mass Protest Adoption in Social Network Communities using Geometric Brownian Motion. *ACM SIGKDD Intl. Conference on Knowledge Discovery and Data Mining 2014, New York City. Acceptance Rate: 14.6%*.
22. Shashidhar Sundareisan\*, Abhay Rao Bhadriraju, M. Saquib Khan, Naren Ramakrishnan and B. Aditya Prakash. SansText: Classifying Temporal Topic Dynamics of Twitter Cascades Without Tweet Text. *ACM/IEEE ASONAM Advances in Social Network Analysis and Mining Conference 2014, Beijing. Acceptance Rate: 18%*.
23. Yao Zhang\* and B. Aditya Prakash. DAVA: Distributing Vaccines over Networks under Prior Information. *SDM SIAM Data Mining Conference 2014, Philadelphia Acceptance Rate: 15.4%*.
24. Evangelos E. Papalexakis, Tudor Dumitras, Duen Horng Chau, B. Aditya Prakash and Christos Faloutsos. Spatio-temporal Mining of Software Adoption & Penetration. *ACM/IEEE ASONAM Advances in Social Network Analysis and Mining Conference 2013, Niagara Falls. Acceptance Rate: 13%. (Invited to SNAM Journal Best Papers of ASONAM)*.
25. B. Aditya Prakash, Lada Adamic, Theodore Iwashnya, Hanghang Tong and Christos Faloutsos. Fractional Immunization on Networks. *SDM SIAM Data Mining Conference 2013, Austin. Acceptance Rate: 14.4%*.

26. Danai Koutra, Vaseilios Koutras, B. Aditya Prakash and Christos Faloutsos. Patterns amongst Competing Task Frequencies: Super-Linearities, and the Almond-DG model. *PAKDD Pacific-Asia Conference on Knowledge Discovery and Data Mining 2013, Gold Coast. Acceptance Rate: 11.3%.*
27. B. Aditya Prakash, Jilles Vreeken and Christos Faloutsos. Spotting Culprits in Epidemics: Who and How many?. *IEEE ICDM International Conference on Data Mining 2012, Brussels. Acceptance Rate: 10%. (Invited to KAIS Journal Best Papers of ICDM).*
28. Hanghang Tong, B. Aditya Prakash, Tina Eliassi-Rad, Michalis Faloutsos and Christos Faloutsos. Gelling, and Melting, Large Graphs through Edge Manipulation. *ACM CIKM Intl. Conference on Information and Knowledge Management 2012, Hawaii. Acceptance Rate: 13.4%. (Received the CIKM Best Paper Award (all three tracks)).*
29. Yasuko Matsubara, Yasushi Sakurai, B. Aditya Prakash, Lei Li and Christos Faloutsos. Rise and Fall Patterns of Information Diffusion: Model and Implications. *ACM SIGKDD Intl. Conference on Knowledge Discovery and Data Mining 2012, Beijing. Acceptance Rate: 17%.*
30. Alex Beutel, B. Aditya Prakash, Roni Rosenfeld and Christos Faloutsos. Interacting Viruses on a Network: Can both survive? *ACM SIGKDD Intl. Conference on Knowledge Discovery and Data Mining 2012, Beijing. Acceptance Rate: 17%.*
31. B. Aditya Prakash, Alex Beutel, Roni Rosenfeld and Christos Faloutsos. Winner-takes-all: Competing Viruses or Ideas on fair-play networks. *ACM WWW World Wide Web Conference 2012, Lyon. Acceptance Rate: 12%.*
32. B. Aditya Prakash, Deepayan Chakrabarti, Michalis Faloutsos, Nicholas Valler and Christos Faloutsos. Threshold Conditions for Arbitrary Cascade Models on Arbitrary Networks. *IEEE ICDM Intl. Conference on Knowledge Discovery and Data Mining 2011, Vancouver. Acceptance Rate: 12.85%. (Invited to KAIS Journal Best Papers of ICDM).*
33. Lei Li and B. Aditya Prakash. Times Series Clustering: Complex is Simpler!. *ICML Intl. Conference on Machine Learning 2011, Bellevue. Acceptance Rate: 25.8%.*
34. Nicholas Valler, B. Aditya Prakash, Hanghang Tong, Michalis Faloutsos and Christos Faloutsos. Epidemic Spreading on Mobile Ad Hoc Networks: Determining the Tipping Point. *IEEE/IFIP NETWORKING 2011, Valencia. Acceptance Rate: 21.8%.*
35. Hanghang Tong, B. Aditya Prakash, Tina Eliassi-Rad and Christos Faloutsos. On the Vulnerability of Large Graphs. *IEEE ICDM Intl. Conference on Knowledge Discovery and Data Mining 2010, Sydney. Acceptance Rate: 19.55%.*
36. B. Aditya Prakash, Hanghang Tong, Nicholas Valler, Michalis Faloutsos and Christos Faloutsos. Virus Propagation on Time-Varying Networks: Theory and Immunization Algorithms. *ECML-PKDD European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases 2010, Barcelona. Acceptance Rate: 18%.*
37. Lei Li, B. Aditya Prakash and Christos Faloutsos. Parsimonious Linear Fingerprinting for Time Series. *VLDB Very Large Databases Conference 2010, Singapore. Acceptance Rate: 17.6%.*
38. Keith Henderson, Tina Eliassi-Rad, Christos Faloutsos, Leman Akoglu, Lei Li, Koji Maruhashi, B. Aditya Prakash and Hanghang Tong. MetricForensics: A Multi-Level Approach for Mining Volatile Graphs. *ACM SIGKDD Intl. Conference on Knowledge Discovery and Data Mining 2010, Washington D.C.. Acceptance Rate: 17.4%.*
39. B. Aditya Prakash, Ashwin Sridharan, Mukund Seshadri, Sridhar Machiraju and Christos Faloutsos. EigenSpokes: Surprising Patterns and Scalable Community Chipping in Large Graphs. *PAKDD 2010, Hyderabad. Acceptance Rate: 10.2%.*

40. B. Aditya Prakash, Nicholas Valler, David Andersen, Michalis Faloutsos and Christos Faloutsos. BGP-lens: Patterns and Anomalies in Internet-Routing Updates. *ACM SIGKDD Intl. Conference on Knowledge Discovery and Data Mining 2009, Paris*. Acceptance Rate: 18%.
41. C. Gokhale, N. Gupta, P. Kumar, L. V. S. Lakshmanan, R. Ng and B. Aditya Prakash. Complex Group-By Queries For XML. *IEEE ICDE Intl. Conference on Data Engg. 2007, Istanbul*. Acceptance Rate: 19%.

*Refereed Workshops (student authors advised by me marked with \*)*

1. Bijaya Adhikari\*, Yao Zhang\*, Naren Ramakrishnan and B. Aditya Prakash. Distributed Representation of Subgraphs. *IEEE ICDM Data Mining Large Networks Workshop 2017, New Orleans*.
2. Abhishek Sharma and B. Aditya Prakash. Graphs for Malware Detection: The Next Frontier. *ACM SIGKDD Mining and Learning with Graphs Workshop 2017, Halifax*.
3. Venkata Pavan Rangudu, Bijaya Adhikari\*, B. Aditya Prakash and Anil Vullikanti. Using Partial Probes to Infer Network States. *ACM SIGKDD Mining and Learning with Graphs Workshop 2017, Halifax*.
4. Sangkeun Lee, Liangzhe Chen\*, Sisi Duan, Supriya Chinthavali, Mallikarjun Shankar, and B. Aditya Prakash. URBAN-NET: A Network-based Infrastructure Monitoring and Analysis System for Emergency Management and Public Safety. *IEEE BigData-Big Data for Sustainable Development Workshop 2016, Washington DC*.
5. Sorour Amiri\*, Liangzhe Chen\* and B. Aditya Prakash. Segmenting Sequences of Node-labeled Graphs. *IEEE ICDM Data Mining Large Networks Workshop 2016, Barcelona*.
6. Ahsanur Rahman, Steve Jan\*, Hyunju Kim, B. Aditya Prakash and T. M. Murali. Mining Unstable Communities from Network Ensembles. *IEEE ICDM Data Mining Large Networks Workshop 2015, Atlantic City*.
7. Xuetao Wei, Nicholas Valler, Michalis Faloutsos, Iulian Neamtui, B. Aditya Prakash and Christos Faloutsos. Smartphone Viruses Propagation on Heterogeneous Composite Networks. *IEEE Network Science Workshop 2013, West Point*.
8. B. Aditya Prakash, Michalis Faloutsos and Christos Faloutsos. Formalizing the BGP stability problem: patterns and a chaotic model. CMU-Technical Report. Preliminary Version in *IEEE INFOCOM NetSciCom Workshop, 2011*.
9. B. Aditya Prakash, Ashwin Sridharan, Mukund Seshadri, Sridhar Machiraju and Christos Faloutsos. Surprising Patterns and Scalable Community Detection in Large Graphs. *IEEE ICDM Large Scale Data Mining Workshop 2009, Miami*.

PATENTS

1. Ashwin Sridharan, Mukund Seshadri, James Schneider, B. Aditya Prakash, Christos Faloutsos and Sridhar Machiraju. US Patent 9,491,055. Determining User Communities in Communication Networks. (granted, November 2016)
2. B. Aditya Prakash, Alice Zheng, Jack Stokes, Eric Fitzgerald, Theodore Hardy. US Patent 8,805,839. Analysis of Computer Network Activity by Successively Removing Accepted Types of Access Events (granted, August 2014.)

GRANTS

1. NSF CAREER. *Bridging the Data-Model Gap—Leveraging Surveillance for Propagation Mining over Networks*. PI: Prakash. Amount: \$550,000. Duration: Apr 2 2018-June 2023.
2. Oak Ridge National Laboratory 2018. *Designing interactive systems for Critical Infrastructure Analysis*. PI: Prakash. Amount: \$32,000. Duration: March 15 - Sept 30, 2018.

3. Oak Ridge National Laboratory 2015-17. *Mining Composite Inter-dependent Networks*. PI: Prakash. Amount: \$100,000. Duration: Nov 15 2015-Sept 30 2017.
4. Facebook Faculty Gift Award 2015. Amount: \$25,000 (unrestricted funds).
5. NEH/DFG Bilateral Digital Humanities Program. *Tracking the Russian Flu in U.S. and German Medical and Popular Reports, 1889-1893*. PI: Ewing (History, VT). co-PI: Prakash. Amount: \$175,000 (personal share: 40%). Duration: 07/01/2015-12/15/2017.
6. NSA Science of Security (subcontract to UMD). *Human-behavioral Modeling of Cyber-vulnerability*. PI: Prakash (VT part). Amount: \$315,000 (VT part). Duration: Feb 01 2014-Jan 31 2017.
7. NSF IIS EAGER (ID: IIS-1353346). *Immunization in Influence and Virus Propagation on Large Networks*. PI: Prakash. Amount: \$88,821. Duration: Sept 15 2013-Aug 31 2014.
8. VT Provost's Office Junior Faculty Grant. Amount: \$1,500. Duration: Mar 2014-Mar-2016.
9. Amazon Web Services (AWS) Teaching Grant. Amount: \$10,000 credits for my classes CS6604, CS5614 and CS4604.

## TEACHING

### *Instructor*

- ◇ **CS 5525/STAT 5525 Data Analytics I** (Graduate, Enrollment: 70, Computer Science Department, VT). (Spring 2018)
- ◇ **CS 3114 Data Structures and Algorithms** (Undergraduate, Enrollment: 70, Computer Science Department, VT). (Fall 2016)
- ◇ **CS 5614 (Big) Data Management Systems** (Graduate, Enrollment: 60, Computer Science Department, VT). (Fall 2014, Spring 2017)
- ◇ **CS 6604 Data Mining Large Networks and Time-Series** (Graduate, Enrollment: 30, Computer Science Department, VT). (Fall 2013, Fall 2015, Fall 2017)
- ◇ **CS 4604 Introduction to Database Management Systems** (Undergraduate, Enrollment: 35-45, Computer Science Department, VT). (Spring 2013, Spring 2014, Spring 2015, Spring 2016)

### *Guest Lectures*

- ◇ **CS 1944 Sophomore Seminar** (Computer Science Department, VT). Lecture: Big Data and Machine Learning. Instructor: Prof. Cal Ribbens. (2015)
- ◇ **CS 5604 Urban Computing** (Computer Science Department, VT). Lecture: Urban Computing and Computational Epidemiology. Instructor: Prof. Naren Ramakrishnan. (2015)
- ◇ **CEE-504 Info. Tech. in Construction** (Civil and Environmental Engineering Department, VT). Lecture: Big Data: Dynamical Processes on Networks. Instructor: Prof. Sunil Sinha. (2012)
- ◇ **CS-6604 Social Media Analytics** (Computer Science Department, VT). Lecture: Information Diffusion. Instructor: Prof. Naren Ramakrishnan. (2012)
- ◇ **15-826 Multimedia Databases and Data Mining** (Machine Learning Department, CMU). Lecture: Virus/Influence Propagation. Instructor: Prof. Christos Faloutsos. (2011)
- ◇ **47-867 Social Network Analysis** (Tepper School of Business, CMU). Lecture: Epidemic Thresholds. Instructor: Prof. R. Ravi. (2010)

### *Teaching Assistant*

- ◇ **15-451 CMU Undergraduate Algorithms** by Prof. Avrim Blum and Prof. Manuel Blum: Was the senior TA, held weekly recitations, graded assignments, held office hours etc.
- ◇ **15-415 CMU Database Applications** by Prof. Christos Faloutsos: Designed and graded assignments, held office hours etc.



STUDENT ADVISING ◇ **Ph.D. Students**

1. Yao Zhang. CS (Proposed: January 2017, Defense: September 2017. First Employment: Asst. Professor (tenure track), CS, University of Memphis, Tennessee)
2. Liangzhe Chen. CS (Proposed: August 2017, Expected Defense: March 2018. First Employment: Pinterest.)
3. Sorour Ekhtiari Amiri. CS (Expected 2019)
4. Bijaya Adhikari. CS (Expected 2020)
5. Anika Tabassum. CS (Expected 2022)
6. Stacey Clifton. Sociology (co-advised with John Ryan). (Expected 2020)
7. Davon Woodard. Public and International Affairs (Planning, Governance and Globalization) (co-advised with David Bieri). (Expected 2021)

◇ **M.S. Students**

1. Xinfeng Xu. Physics PhD (MS in CS). (Expected 2018)
2. Shashidhar Sundereisan. (Graduated 2014. First Employment: Bloomberg Inc. Thesis was selected as the CS nominee for VT Graduate School's William Preston Society Outstanding Thesis award)
3. Benjamin Wang. (Graduated 2014. First Employment: Telos Communications.)

◇ **Committee Membership**

1. Md. Hafeez, Ph.D., Advisor: Prof. Ali Butt. Thesis Proposal: Spring 2013. Graduated: Summer 2014.
2. Md. Ahsanur Rahman, Ph.D., Advisor: Prof. T. M. Murali. Thesis Proposal: Fall 2013. Graduated: Fall 2015.
3. Sally Hamouda, Ph.D., Advisor: Prof. Cliff Shaffer. Thesis Proposal: Fall 2014. Graduated: Fall 2015.
4. Marjan Momtazpour, Ph.D., Advisor: Prof. Naren Ramakrishnan. Thesis Proposal: Fall 2015. Graduated: Spring 2016.
5. Pejman Khadivi, Ph.D., Advisor: Prof. Naren Ramakrishnan. Thesis Proposal: Fall 2015. Graduated: Fall 2016.
6. K. S. M. Tozammel Hussain, Ph.D., Advisor: Prof. Naren Ramakrishnan. Thesis Proposal: Spring 2015. Graduated: Fall 2016.
7. Huijuan Shao, Ph.D., Advisor: Prof. Naren Ramakrishnan. Thesis Proposal: Fall 2015. Graduated: Fall 2016.
8. Fang Liu, Ph.D., Advisor: Prof. Daphne Yao. Thesis Proposal: Fall 2015. Graduated: Summer 2017.
9. Qing Sun, Ph.D., Advisor: Prof. Dhruv Batra (ECE). Thesis Proposal: Fall 2016. Graduated: Fall 2017.
10. Bingsheng Wang, Ph.D., Advisor: Prof. Chang-Tien Lu. Thesis Proposal: Spring 2015.
11. Siryui Yao. Ph.D., Advisor: Prof. Bert Huang.
12. M. Raihanul Islam. Ph.D. Advisor: Prof. Naren Ramakrishnan.
13. Sneha Mehta. Ph.D. Advisor: Prof. Naren Ramakrishnan.
14. Aditya Pratapa. Ph.D. Advisor: Prof. T. M. Murali.
15. Aditya Bharadwaj. Ph.D. Advisor: Prof. T. M. Murali.
16. Sarunya Pumma. Ph.D. Advisor: Prof. Wuchun Feng.

17. Aravindan Mahendiran, M.S, Advisor: Prof. Naren Ramakrishnan. Graduated: Spring 2014.
18. Rushi Kaw, M.S., Advisor: Prof. Madhav Marathe. Graduated: Summer 2014.
19. Md. Saquib Khan, M.S., Advisor: Prof. Anil Vullikanti. Graduated: Fall 2014.
20. Michael Cogswell, M.S., Advisor: Prof. Dhruv Batra (ECE). Graduated: Spring 2015.
21. Rathna Senthil, M.S., Advisor: Prof. Lennwood Heath. Graduated: Spring 2016.
22. Mitchell Wagner. M.S.. Advisor: Prof. T. M. Murali.
23. Zachary Burch. M.S. Advisor: Prof. Daphne Yao.

COMMUNITY  
ACTIVITIES

◇ **Member** - ACM, IEEE, ASEE, SIAM

◇ **Tutorials and Summer Schools**

1. *Data Mining Critical Infrastructure Systems—Models and Tools*. Tutorial at SDM, San Diego. April 2018.
2. *Propagation and Data Mining: Models, Algorithms and Applications*. Tutorial at SDM, Houston. April 2017.
3. *Propagation and Data Mining: Models, Algorithms and Applications*. Tutorial at SIGKDD, San Francisco. August 2016.
4. *Propagation on Large Networks: Theory and Tools*. Tutorial at ECML-PKDD, Bristol. September 2012.
5. *Understanding and Managing Cascades on Large Graphs*. Tutorial at VLDB, Istanbul. August 2012.
6. *Virus Propagation on Large Networks: Theory and Tools*. MIDAS Summer Undergraduate Research School, UPitt. June 2012.

◇ **Keynotes and Invited Talks/Panels**

1. *Understanding, Predicting and Managing Behaviors using Propagation: From Epidemiology to Cyber-security*. CMU Heinz College, Pittsburgh. April 2018.
2. *Doctoal Forum*. Invited Participant. ICDM 2017, New Orleans. Nov 2017.
3. *Leveraging Propagation for Data Mining: Models, Algorithms and Applications*. United Technologies Research Center (UTRC), Hartford. Nov 2017.
4. *Leveraging Propagation for Data Mining: Models, Algorithms and Applications*. MLSIG Machine Learning Seminar, IISc. Bangalore. Jan 2017.
5. *Leveraging Propagation for Data Mining: Models, Algorithms and Applications*. CSE, IIT-Bombay. Mumbai. Dec 2016.
6. *Leveraging Propagation for Data Mining*. Social Computing Workshop, Army Research Lab. Adelphi. Sep 2016.
7. *Understanding, Predicting and Managing Behaviors using Propagation: From Flu-Trends to Cyber-security*. Fidelis Cybersecurity. Bethesda. Sep 2016.
8. *Understanding, Predicting and Managing Behaviors using Propagation: From Flu-Trends to Cyber-security*. Facebook. Menlo Park. Feb 2016.
9. *Leveraging Information Theory for Mining Graphs and Sequences: Propagation to Segmentation*. Information Theory and Applications (ITA) Workshop. San Diego. Feb 2016.
10. *Understanding and Predicting Human Behavior using Propagation: From Flu-trends to Cyber-security*. Keynote Talk at IEEE ICDM Behavior Analysis, Modeling, and Steering (BEAMS) Workshop. Atlantic City. Nov 2015.

11. *Making Diffusion Work for You—From Social Media to Epidemiology*. ORNL Annual Biomedical Science and Eng. Center Conference (BSEC). Oak Ridge. Aug 2015.
12. *Current and Future Challenges in Mining Large Networks*. Invited Panelist and talk. SDM Networks Workshop Panel. Vancouver, Canada. May 2015.
13. *Making Diffusion Work for you*. MIT Lincoln Labs Graph Exploitation Symposium. Cambridge. August 2014.
14. *Data Mining Networks and Time-Series for Fun and Profit*. VT ECE Summer Research Experience for Undergraduates. June 2014.
15. *Understanding and Managing Cascades on Large Graphs*. NEC Labs. Princeton. April 2014.
16. *Dynamical Processes for Cyber-Vulnerability*. ARO Workshop on Cyber Warfare: Building the Scientific Foundation. George Mason University, Fairfax. March 2014.
17. *Understanding and Managing Cascades on Large Graphs*. SIAM 2013 Conference at Oak Ridge National Lab, Oak Ridge. March 2013.
18. *Understanding and Managing Cascades on Large Graphs*. Virginia Tech., CS Friday Series. November 2012.
19. *Influence Propagation on Large Graphs*. Massive Graphs: Big Compute meets Big Data, SIAM Annual Meeting, Minneapolis. July 2012.
20. *Propagation on Large Networks*. Network Science - CTA INARC Seminar. May 2012.
21. *Dynamical Processes on Large Networks*. Army Research Lab, Adelphi, Seminar. April 2012.
22. *Dynamical Processes on Large Networks*. University of Maryland, College Park, CS Seminar. April 2012.
23. *Propagation on Large Networks*. University of Pittsburgh, Department of Public Health, MIDAS Seminar. Pittsburgh. April 2012.
24. *Dynamical Processes on Large Networks*. Google Research, New York City, Research Talk. April 2012.
25. *Dynamical Processes on Large Networks*. Virginia Tech., CS Seminar. March 2012.
26. *Dynamical Processes on Large Networks*. AT&T Research, Florham Park, Seminar. March 2012.
27. *Epidemic Thresholds, Immunization and BGP*. University of Michigan, Ann Arbor, Information Seminar. April 2010.
28. *Virus Propagation in Time-Varying Networks: Theory and Immunization Algorithms*. BBN, Cambridge. INARC/NS-CTA Meeting. September 2010.
29. *Virus Propagation in Time-Varying Networks: Theory and Immunization Algorithms*. CMU-Yahoo! Machine Learning Seminar. October 2010.
30. *BGP-lens: Patterns and Anomalies in Internet-Routing Updates*. ECE Parallel Data Laboratory Retreat. October 2009.

◇ **Conference Organization**

1. **Publicity Chair**, SDM 2016, Miami.
2. **Demo Chair**, IEEE ICDM 2015, Atlantic City.

◇ **Area Chair (or Senior Program Committee)**

1. SDM 2018, San Diego
2. WSDM 2018, Los Angeles
3. ACM SIGKDD 2017, Halifax

4. SDM 2017, Houston
5. WSDM 2016, San Francisco
6. CIKM 2015, Melbourne

◇ **Program Committee member**

*Conferences*

1. 2018: WWW, SIGKDD, ASONAM
2. 2017: WWW, WSDM, COMAD (India SIGMOD)
3. 2016: SDM, WWW, SIGKDD, ASONAM, ICDM, CoDS (India KDD), IC2S2
4. 2015: SDM, WSDM, SIGKDD, ICDM, ASONAM
5. 2014: SDM, WWW, SIGKDD, ICDM, ASONAM, IEEE BigData, ECML/PKDD, ICWSM, SIGMOD (Demo), ACM SAC, IEEE R10 HTC
6. 2013: SDM, IJCAI, AAI, IEEE BigData, ECML/PKDD

*Workshops*

1. KDD 2017 Mining and Learning on Graphs
2. VLDB 2016 SoDAM Workshop
3. SC 2016 HPGDMP Workshop
4. SocInfo 2016 Workshop on Social Influence
5. SIGKDD 2015 Workshop on Interactive Data Analytics and Exploration
6. WWW 2014 Big Graph Mining Workshop
7. SDM 2014 Optimization Methods for Anomaly Detection
8. SDM 2014 Mining Large Networks
9. SIGKDD 2014 Interactive Data Exploration and Analysis
10. SocInfo 2014 Workshop on Social Influence
11. SDM 2015 Mining Large Networks
12. ICDM 2011 Data Mining Technologies for Computational Creative Intelligence

◇ **Journal Editorial Board Member**

1. 2016- : Data Mining and Knowledge Discovery Journal (DAMI)

◇ **Journal Reviewer**

TKDE=Trans. on Knowledge and Data Engg.; TKDD=Trans. on Knowledge Discovery from Data; DAMI=Data Mining and Knowledge Discovery Journal; TNET=Transactions on Networking; ToIT=Transactions on Information Theory; JSAC=Journal on Selected Areas in Communication; TOIS=Trans. on Information Systems; JMLR=Journal of Machine Learning Research; TNSE: Transactions on Network Science and Engineering

1. 2018: IEEE TKDE, IEEE/ACM TNET, IEEE TNSE, Nature Digital Medicine, ACM TKDD
2. 2017: IEEE TKDE (thrice), ACM TKDD, Nature Scientific Reports, ACM Computing Surveys, DAMI, Science
3. 2016: IEEE TKDE (twice), ACM TKDD (twice), DAMI
4. 2015: IEEE TKDE (thrice), DAMI (twice), ACM TOIS, VLDB Journal
5. 2014: IEEE TKDE, IEEE ToIT, Computers and Security, ACM TKDD, DAMI
6. 2013: IEEE/ACM TNET, IEEE TKDE, ACM TKDD, JIIS, DAMI, VLDB Journal, DAMI, SIAM Journal on Applied Dynamical Systems, Networking Science, Information Processing Letters (IPL), Social Network Analysis Journal, Network Science, JMLR

7. 2012: DAMI, IEEE TKDE, IEEE JSAC, Advances in Complex Systems Journal, Europhysics Letters (EPL), Journal of Computer and System Sciences (JCSS)

◇ **Proposal and Panel Reviews**

1. NSF Review Panelist CISE 2013 (once), 2014 (twice), 2016 (once), 2017 (once).
2. Referee for a proposal to the Army Research Office (ARO) (2017)
3. Referee for a proposal to the German Minerva ARCHES program (2016)

◇ **Virginia Tech. Committees**

1. CS: Undergraduate Program Committee (2015-18)
2. CS: Faculty Search Committee (2014, 2015 (two searches), 2016, 2017, 2018)
3. College of Science: Computational Modeling and Data Analytics Colloquium Committee (2014-15)
4. CS: Ph.D. Qualifiers Committee (2013, 2014, 2015)

◇ **External Reviewer** (several times): EDBT, VLDB, WWW, KDD, ICDM, SIGMOD, ICWSM

◇ **Organizer DB-Seminar** CMU (2010-2012): Organized the Database Seminar at CMU.

◇ **Dataset Manager** CMU (2008-2011): Managed the data repository of the DB-group.

◇ **Student Contact** CMU (2008-2011): Contact for new students admitted to the Department.

◇ **Student Mentor** IGSA@CMU (2010-2011): Mentored newly admitted Indian students of various departments in CMU. Helped them with academic and cultural issues.

◇ **Student Mentor** CSE, IIT Bombay (2006): Mentored sophomores of the CSE Dept. by guiding them on academic issues and helping them convey their difficulties to the faculty.

◇ **System Administrator** Hostel Six, IIT Bombay (2004-2005): Maintained a network consisting of all the machines (Linux, Windows and Mac based) in the dorm. Work involved setting up NFS/NIS Servers, Proxy, FTP, DNS and handling user accounts.

◇ **Head Boy** Delhi Public School, Bhilai.

EXTRACURRICULAR  
ACTIVITIES

- ◇ Am a **certified Tabla Visharad (Classical Tabla Scholar)** from the famous Indira Kala Sangeet Vishwavidyalaya, Khairagarh, C.G., India after successful completion of the 6-year theory+practical course (1995-2000). Secured **Distinction** in practical in 4th year. Performed solo in functions in school, college and outside. (Tabla is an Indian musical instrument)
- ◇ Was a regular member of school and house Cricket, Dramatics, Debating and Quizzing teams.