VIVEK K. SINGH

4 Huntington St.,
New Brunswick, NJ 08901
Phone: 848 932 7588
vivek.k.singh@rutgers.edu
http://wp.comminfo.rutgers.edu/vsingh

RUTGERS UNIVERSITY   **New Brunswick, NJ**

Assistant Professor (tenure-track), Department of Library and Information Science.   **Sep 2014 –**

Member of Graduate Faculty, Department of Electrical and Computer Engineering.

Associate Member of Graduate Faculty, Department of Computer Science.

Director, Behavioral Informatics Lab.

- Classes taught: Data Analytics for Information Professionals, Social Informatics, and Foundations of Data Science.
- Research Interests: Computational Social Science, Multimedia Information Systems, Data Analytics.

MASSACHUSSETS INSTITUTE OF TECHNOLOGY   **Cambridge, MA**

Visiting Professor, Media Lab   **Sep 2014 –**

- This is a 5% time unpaid appointment to allow for collaborative research on understanding and shaping human behavior using social, behavioral, 'big' data.

PROFESSIONAL PREPARATION

MASSACHUSSETS INSTITUTE OF TECHNOLOGY   **Cambridge, MA**

Post-Doctoral Associate, Human Dynamics Group, MIT Media Lab   **Sep 2012-Aug 2014**

- Research Focus: Understanding and influencing human behavior using social, behavioral, 'big' data. *(Mentor: Professor Alex 'Sandy' Pentland)*
- Research Interests: Social Reality Mining, Computational Social Science, Personal Data Analytics.

UNIVERSITY OF CALIFORNIA, IRVINE   **Irvine, CA**

Ph.D., Information and Computer Science   **2007-2012**

- Thesis Topic: "Personalized Situation Recognition" *(Advisor: Professor Ramesh Jain)*
- Research Interests: Personalized Decision Systems, Multimedia Systems, Social Media.

NATIONAL UNIVERSITY OF SINGAPORE   **Singapore**

Master of Computing, (Computer Science)   **2003-2005**

Bachelor of Engineering, (Computer Engineering)   **1998-2002**

- Master's Thesis: "Coopetitive Multi-camera Surveillance using Model Predictive Control".
- Fully sponsored for undergraduate studies under the SIA-NOL scholarship. (One of 25 candidates selected from over 8,000 applicants nation-wide in India).

AWARDS AND ACHIEVEMENTS

- *Distinguished Achievement in Research* Award, Library and Information Science Department, Rutgers University, 2015.
- Selected as a "**Rising Star**" speaker by ACM SIG Multimedia (one out of 12 selected worldwide- details [here](#)), 2015.
- *1st prize* for predicting crime patterns in London in *Datathon on "Big Data for Social Good"* organized by O2, MIT, Telefonica and Open Data Institute, at Campus Party, London, Sep 2013.
- Selected as an *"Emerging Leader in Multimedia Research",* by *IBM Research Labs, NY.* One of 10 selected world-wide in 2009.
- *Best Paper Award* at ACM Workshop on Social Media (WSM 2009) co-located with ACM Multimedia Conference.
- *Best Student Paper* at IEEE Workshop on Situation Management (SIMA 2009), co-located with IEEE Military Communications conference.

RESEARCH GRANTS

- National Science Foundation, CRII: CHS: Cyberbullying Detection Using Content and Social Network Analysis, Role: (Single) PI, 2015-2018. $174,248.00.
- National Science Foundation, CRII: CHS: Cyberbullying Detection Using Content and Social Network Analysis, Role: (Single) PI, 2017-2018 (Research Experience for Undergraduates Supplement). $14,100.00.
- National Science Foundation, Student Travel Support for the 26th ACM International Conference on Multimedia 2018 (ACM MM 2018), Role: (Single) PI, 2018-2019. $15,543.00
- Google Research Award, Predicting Search Behavior Using Physical and Online Explorations, Role; Co-PI, PI: Chirag Shah, 2016, $62,813.00.
- SCI Research Development Grant, Predicting User Well-being via Socio-Mobile data, Role: (Single) PI, 2015-2015. $7,500.00.
- SCI Research Development Grant, Real-time Diversity Analytics, Role: (Single) PI, 2016-2016. $3,500.00.
- SCI Research Development Grant, Designing Nudges for Mobile Information Privacy, Role: (Single) PI, 2017-2017. $3,400.00.
- SCI Research Development Grant, Reimagining Mobile Phones as Cooperation Catalysts, Role: (Single) PI, 2018-2018. $3,000.00.
- Rutgers Office for Research and Economic Development (ORED) Interdisciplinary Research Group (IRG), Human Centered Design with Communities for Individual and Population Health. Role: Co-PI, PIs: Mark Aakhus and Sarah Allred, 2018-2019, $200,000.00.

TEACHING

- **Teaching at Rutgers University:**   **2014-**
    - Data Analytics for Information Professionals
        - ITI/MI programs cross listed: Fall 2014, Spring 2015, Fall 2016
        - ITI – Fall 17, Fall 18
        - MI- Fall 17, Summer 18, Fall 18
    - Social Informatics (ITI)– Fall 2015
    - Foundations of Data Science (MI)– Fall 2016
    - Understanding, Building, and Designing Social Media (MI/PhD cross listed) – Spring 2017

- **Teaching at Institute of Technical Education, Singapore**   **2002-2006**
- Four years of full-time teaching experience as a Lecturer. Classes taught (at post-secondary education level) included Web Programming, Multimedia Production, and Database Systems. Duties included developing the curriculum, delivering lectures, leading laboratory sessions, and mentoring students on various internal and external projects.

PUBLICATIONS

Total Citations: 1463

H-index: 23

(As per Google Scholar on Jan 04, 2019)

Authored and Edited Books

1. **Singh, V.K.,** & Jain, R*., Situation Recognition Using EventShop* (co-authored monograph), Springer, pp. 1-150, ISBN: 978-3-319-30535-6 / 3319305352 (Published: June 2016.)

2. Bozkaya, B., & **Singh, V.K.** *Geo-Intelligence and Visualization through Big Data Trends* (edited book). Hershey, PA: IGI Global. doi 10.4018/978-1-4666-8465-2, pp. 1-349, 2015

Journals Articles: Published or Accepted[1]

1. Bati, G.[g], & **Singh, V.K.** (2018). Altrumetrics: Inferring Altruism Propensity Based on Mobile Phone Use Patterns. IEEE Transactions on Big Data. Early Access: DOI: 10.1109/TBDATA.2018.2873346

2. Ghosh, I.[g], & **Singh, V.K.** (2018), Phones, Privacy, and Predictions: A study of phone logged data to predict privacy attitudes of individuals. Online Information Review. https://doi.org/10.1108/OIR-03-2018-0112.

3. Soni, D[u]., & **Singh, V.K.** (2018), See No Evil, Hear No Evil: Audio-Visual-Textual Cyberbullying Detection, Proceedings of the ACM Human-Computer Interact. 2, CSCW, Article 164, 2018.

4. Huang, Q.[g], **Singh, V. K.,** & Atrey, P. K. (2018). On cyberbullying incidents and underlying online social relationships. *Journal of Computational Social Science*, 1-20. 1: 241. https://doi.org/10.1007/s42001-018-0026-9

5. **Singh, V.K.,** Goyal, R.[g], & Wu, S.[u] (2018), Riskalyzer: Inferring Individual Risk-Taking Propensity Using Phone Metadata. *Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies*, *2*(1), 34.

6. Agarwal, R.[u], Lin, C.C., Chen, K.T., & **Singh, V.K.,** (2018) Predicting financial trouble using call data - on social capital, phone logs, and financial trouble. *PloS ONE* 13(2), e0191863.

7. Dong, X., Suhara, Y., Bozkaya, B., **Singh, V. K.,** Lepri, B. & Pentland, A. (2018) Social Bridges in Community Purchase Behavior, *ACM Transactions on Intelligent Systems and Technology (TIST), Volume 9 Issue 3, February 2018 Article No. 33*.

8. **Singh, V.K.** & Ghosh, I.[g] (2017), Inferring Individual Social Capital Automatically via Phone Logs. Proceedings of the ACM Human-Computer Interact. 1, CSCW, Article 95 (December 2017), 12 pages. DOI: https://doi.org/10.1145/3134730

9. **Singh, V. K.,** Fernandes, D., Kankanhalli, M., & Haenselmann, T. (2016). Decoupled Multicamera Sensing for Flexible View Generation. *Journal of Sensors*, *501*, 8137859.

10. Almaatouq, A., Shmueli, E., Nouh, M., Alabdulkareem, A., **Singh, V. K.,** Alsaleh, M., Alarifi, A., Alfaris, A. & Pentland, A. (2016). If it looks like a spammer and behaves like a spammer, it must be a spammer: analysis and detection of microblogging spam accounts. *International Journal of Information Security*, 15:475, 1-17. https://doi.org/10.1007/s10207-016-0321-5

11. de Montjoye, Y. A., Radaelli, L., **Singh, V. K**., & Pentland, A. (2015). Unique in the shopping mall: On the reidentifiability of credit card metadata. *Science*, *347*(6221), 536-539.

12. **Singh, V. K.,** Bozkaya, B., & Pentland, A. (2015). Money Walks: Implicit Mobility Behavior and Financial Well-Being. *PloS one*, *10*(8), e0136628.

13. Barnaghi, P., Sheth, A., **Singh, V.,** & Hauswirth, M. (2015). Physical-Cyber-Social Computing: Looking Back, Looking Forward (Guest Editorial). *Internet Computing, IEEE*, *19*(3), 7-11.

14. **Singh, V. K.,** Mani, A., & Pentland, A. (2014). Social Persuasion in Online and Physical Networks. *Proceedings of the IEEE*, *102*(12), 1903-1910.

15. Shmueli, E., **Singh, V. K.,** Lepri, B., & Pentland, A. (2014). Sensing, Understanding, and Shaping Social Behavior. *Computational Social Systems, IEEE Transactions on*, *1*(1), 22-34.

16. **Singh, V. K.,** Freeman, L., Lepri, B., & Pentland, A. S. (2013). Classifying spending behavior using socio-mobile data. *HUMAN*, *2*(2), pp-99.

17. **Singh, V. K.,** Pirsiavash, H., Rishabh, I., & Jain, R. (2009). Towards environment-to-environment (e2e) multimedia communication systems. *Multimedia Tools and Applications*, *44*(3), 361-388.

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[1] [g] indicates that the *graduate* student was directly supervised by Vivek Singh for this research work.

[u] indicates that *undergraduate* student was directly supervised by Vivek Singh for this research work.

18. **Singh, V. K.,** Atrey, P. K., & Kankanhalli, M. S. (2008). Coopetitive multi-camera surveillance using model predictive control. *Machine Vision and applications*, *19*(5-6), 375-393.
19. **Singh, V. K.,** & Kankanhalli, M. S. (2009). Adversary aware surveillance systems. *Information Forensics and Security, IEEE Transactions on*, *4*(3), 552-563.

Book Chapters: Published

1. **Singh, V.** (2017). Situation recognition using multimodal data. In *Frontiers of Multimedia Research* (pp. 159-189). *Editor: Chang, S.F.* Association for Computing Machinery and Morgan & Claypool.
2. Srivastav, K.A., **Singh, V. K.,** Bozkaya, B., & Pentland, A. (2015). Assessing Financial Wellbeing of Merchants by Analyzing Behavioral Patterns in Historical Transactions in Geo-Intelligence and Visualization through Big Data Trends, pp. (76-93), IGI Global, PA.
3. **Singh, V. K.,** Jain, R., & Kankanhalli, M. (2011). Mechanism design for incentivizing social media contributions. In Social media modeling and computing (pp. 121-143). Springer London.

International Peer-Reviewed Conferences: *Proceedings Published* [2]
(Subset based on the following criteria: 6-12 pages, double column format, and acceptance rate between 9% and 29%.)

1. Bati, G.[g], & **Singh, V.K.** (2018). "Trust Us": Mobile Phone Use Patterns Can Predict Individual Trust Propensity. (To appear). In *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems*, 14 pages. ACM. [Acceptance Rate: 25.7%]
2. **Singh, V. K.,** Atrey, A.[u], & Hegde, S.[g] (2017). Do Individuals Smile More in Diverse Social Company? Studying Smiles and Diversity Via Social Media Photos. (Brave New Ideas track) In *Proceedings of the 25th ACM international conference on Multimedia. ACM.* [Acceptance Rate: 29%]
3. **Singh, V. K.,** & Agarwal, R. R.[u] (2016, September). Cooperative phoneotypes: exploring phone-based behavioral markers of cooperation. In *Proceedings of the 2016 ACM International Joint Conference on Pervasive and Ubiquitous Computing* (pp. 646-657). ACM. [Acceptance Rate: 23.9%]
4. Choi, D., Shah, C., & **Singh, V**. (2016, September). Probing the interconnections between geo-exploration and information exploration behavior. In *Proceedings of the 2016 ACM International Joint Conference on Pervasive and Ubiquitous Computing* (pp. 1170-1175). ACM. [Acceptance Rate: 23.9%]
5. Almaatouq, A., Alabdulkareem, A., Nouh, M., Shmueli, E., Alsaleh, M., **Singh, V. K**., Alarifi, A., Alfaris, A., & Pentland, A. S. (2014, June). Twitter: who gets caught? Observed trends in social micro-blogging spam. In *Proceedings of the 2014 ACM conference on Web science* (pp. 33-41). ACM. [Acceptance Rate: 20.1%]
6. **Singh, V. K.,** Freeman, L., Lepri, B., & Pentland, A. S. (2013, September). Predicting spending behavior using socio-mobile features. In *Social Computing (SocialCom), 2013 International Conference on* (pp. 174-179). IEEE. [Acceptance Rate: 9.9%]
7. **Singh, V. K.,** Gao, M., & Jain, R. (2012, October). Situation recognition: an evolving problem for heterogeneous dynamic big multimedia data. In *Proceedings of the 20th ACM international conference on Multimedia* (pp. 1209-1218). ACM. [Acceptance Rate: 20.2%]
8. **Singh, V. K.,** Luo, J., Joshi, D., Lei, P., Das, M., & Stubler, P. (2011, November). Reliving on demand: a total viewer experience. In *Proceedings of the 19th ACM international conference on Multimedia* (pp. 333-342). ACM. [Acceptance Rate: 17.3%]
9. **Singh, V. K.,** Gao, M., & Jain, R. (2010, October). Social pixels: genesis and evaluation. In *Proceedings of the international conference on Multimedia* (pp. 481-490). ACM. [Acceptance Rate: 17.0%]

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[2] Note that in computational disciplines "papers in peer-reviewed conferences are accepted as high-quality scholarly articles."
1. Expert advisory: https://homes.cs.washington.edu/~mernst/advice/conf-vs-journal-uscis.pdf;2. Computing Research Association (CRA) Advisory: http://cra.org/resources/best-practice-memos/evaluating-computer-scientists-and-engineers-for-promotion-and-tenure/)

Other International Peer-Reviewed Conferences and Workshops: *Proceedings Published*[1]

10. Soni, D.[u], & **Singh, V. K.** (2018). Time Reveals all Wounds: Modeling Temporal Dynamics of Cyberbullying Sessions. In *Proceedings of the Eleventh International AAAI Conference on Web and Social Media (ICWSM 2018) (pp.* 684-687) [Acceptance Rate: 25%]

11. **Singh, V. K.,** & Long, T.[g] (2018). Automatic Assessment of Mental Health Using Phone Metadata, In *Proceedings of the. Association for Information Science and Technology*. Length: 10 pages. [Acceptance Rate: 49%]

12. Ghosh, I.[g] & **Singh, V. K.** (2018). Modeling Social Support Scores Using Phone Use Patterns, In *Proceedings of the. Association for Information Science and Technology*. Length: 10 pages. [Acceptance Rate: 49%]

13. **Singh, V. K.,** Hegde, S.[g], & Atrey, A.[u] (2017). Towards Measuring Fine-Grained Diversity Using Social Media Photographs. In *Proceedings of the Eleventh International AAAI Conference on Web and Social Media (ICWSM 2017)* (pp. 668-671). [Acceptance Rate: 19%]

14. **Singh, V. K.,** & Jain, A.[u] (2017, May). Toward Harmonizing Self-reported and Logged Social Data for Understanding Human Behavior. In *Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems* (pp. 2233-2238). ACM. [Acceptance Rate: 25%]

15. **Singh, V. K.,** Ghosh, S.[g], & Jose, C.[g] (2017, May). Toward Multimodal Cyberbullying Detection. In *Proc. of the 2017 CHI Conference Extended Abstracts on Human Factors in Computing Systems* (pp. 2090-2099). ACM. [Acceptance Rate: 38%]

16. **Singh, V. K.,** Radford, M. L., Huang, Q.[g], & Furrer, S. (2017, February). "They basically like destroyed the school one day": On Newer App Features and Cyberbullying in Schools. In *In Proceedings of the 2017 ACM Conference on Computer Supported Cooperative Work and Social Computing (CSCW)* (pp. 1210-1216). [Acceptance Rate: 34.5% under a revise and resubmit model]

17. Choi, D., Shah, C., & **Singh, V.** (2016). Which team benefits from collaboration?: Investigating collaborative information seeking using personal and social contextual signals. In *Proceedings of the. Association for Information Science and Technology*, *53*(1), 1-6.

18. **Singh, V.K.,** Huang, Q.[g], and Atrey, P. (2016), Automated Cyberbullying Detection Using Probabilistic Socio-Textual Information, *ACM/IEEE International Conference on Advances in Social Networks Analysis and Mining*, (pp. 474-478).

19. Huang, Q., **Singh, V. K.,** & Atrey, P. K. (2014, November). Cyber Bullying Detection Using Social and Textual Analysis. In *Proceedings of the 3rd International Workshop on Socially-Aware Multimedia* (pp. 3-6). ACM.

20. Pongpaichet, S., **Singh, V. K**., Jain, R., & Pentland, A. P. (2013). Situation fencing: making geo-fencing personal and dynamic. *In Workshop on Personal Data Meets Distributed Multimedia* (pp. 3-10), ACM.

21. **Singh, V. K.** (2011, November). From multimedia data to situation detection. In *Proceedings of the 19th ACM international conference on Multimedia* (pp. 875-876). ACM.

22. R. Jain, **V.K. Singh,** and M. Gao, (2011) Social Life Networks, *In Proceedings of the WWW Workshop on Social Media Engagement.*

23. Gao, M., **Singh, V. K.,** & Jain, R. (2012, June). Eventshop: from heterogeneous web streams to personalized situation detection and control. In *Proceedings of the 4th Annual ACM Web Science Conference* (pp. 105-108). ACM.

24. **Singh, V. K.,** & Jain, R. (2010, April). Structural analysis of the emerging event-web. In *Proceedings of the 19th international conference on World wide web* (pp. 1183-1184). ACM.

25. **Singh, V. K.,** Jain, R., & Kankanhalli, M. S. (2009, October). Motivating contributors in social media networks. In *Proceedings of the first SIGMM workshop on Social media* (pp. 11-18). ACM. **(Best Paper Award)**

26. **Singh, V. K.,** & Jain, R. (2009, October). Situation based control for cyber-physical environments. In *Military Communications Conference, 2009. MILCOM 2009. IEEE* (pp. 1-7). IEEE. **(Best Student Paper)**

27. Saini, M. K., **Singh, V. K.,** Jain, R. C., & Kankanhalli, M. S. (2008, October). Multimodal observation systems. In *Proceedings of the 16th ACM international conference on Multimedia* (pp. 933-936). ACM. [Acceptance Rate: 33.0%]

28. **Singh, V. K.**, Pirsiavash, H., Rishabh, I., & Jain, R. (2008, October). Towards environment-to-environment (e2e) multimedia communication systems. In *Proc. of the 1st ACM Int. workshop on Semantic ambient media experiences.* (pp. 31-40). ACM.

29. **Singh, V. K.,** & Kankanhalli, M. S. (2007, July). Towards adversary aware surveillance systems. In *Multimedia and Expo, 2007 IEEE International Conference on* (pp. 2038-2041). IEEE. [Acceptance Rate: 45.0%]

30. **Singh, V. K.,** Atrey, P. K., & Kankanhalli, M. S. (2006). Coopetitive multimedia surveillance. In *Advances in Multimedia Modeling* (pp. 343-352). Springer Berlin Heidelberg.

31. Ram, S., Ramakrishnan, K. R., Atrey, P. K., **Singh, V. K.,** & Kankanhalli, M. S. (2006, October). A design methodology for selection and placement of sensors in multimedia surveillance systems. In *Proc. ACM international workshop on Video surveillance and sensor networks* (pp. 121-130). ACM

PATENTS

- Lou, J., Joshi, D., Stubler, P., Das, M., Lei, P. & **Singh, V.K.** *Method for Media Reliving Playback*, *U.S. Patent No. 8879890: Issued November 4, 2014.*

- Lou, J., Joshi, D., Stubler, P., Das, M., Lei, P. & **Singh, V.K.** *Method for media reliving on demand*, *U.S. Patent No. US 908245: Issued July 14, 2015*

INVITED TALKS

- **Keynote Talk:** *Sensing, Understanding, and Shaping Human Behavior,* ACM International Workshop on Computational Models of Social Interactions: Human-Computer-Media Communication, co-located with ACM Multimedia Conference, Brisbane, Australia, 2015.

- *Sensing, Understanding, and Shaping Human Behavior,* Connective Media Seminar, CornellTech, NYC, 2015.

- *Sensing, Understanding, and Shaping Human Behavior,* Human Dynamics Group Seminar, MIT Media Lab, Cambridge, MA, 2015.

- *Sensing, Understanding, and Shaping Human Behavior, 5th International Workshop on Cyber-Physical Cloud Computing,* National Institute on Standards and Technology, 2015.

- *Sensing, Understanding, and Shaping Human Behavior,* Bay Area Multimedia Forum, Stanford, CA, 2014.

MEDIA COVERAGE OF RESEARCH ACTIVITIES

- New York Times, With a Few Bits of Data, Researchers Identify 'Anonymous' People, http://bits.blogs.nytimes.com/2015/01/29/with-a-few-bits-of-data-researchers-identify-anonymous-people/, 2015

- BBC News, Mobile location data 'present anonymity risk, http://www.bbc.com/news/science-environment-21923360, 2015.

- Wall Street Journal, Metadata Can Expose Person's Identity Even Without Name, http://www.wsj.com/articles/metadata-can-expose-persons-identity-even-when-name-isnt-1422558349, 2015

- Nature News, People identified through credit-card use alone, http://www.nature.com/news/people-identified-through-credit-card-use-alone-1.16817

- Harvard Business Review, There's No Such Thing as Anonymous Data, https://hbr.org/2015/02/theres-no-such-thing-as-anonymous-data, 2015

- More coverage: MIT Technology Review, PBS, Le Monde (FR), Die Zeit (DE), Die Spiegel (DE), El Pais (ES), RT, The Hill, Telegraph (UK), Scientific American,New Scientist, Five Thirty Eight, Gizmodo, Fast Company, Computer World,ZDNet, Tom's guide, Popular Mechanics, Motherboard, US News, NBC,CNBC, Huffington Post (US), IEEE Spectrum, Phys.org, Radio Canada (FR), Le Vif (FR), Slate (FR), Trends-Tendance (FR), Science et vie (FR).

- Rutgers CommInfo Public Relations, **Appellate Court Cites Vivek Singh's Study in Decision Against the NSA,** https://comminfo.rutgers.edu/news/appellate-court-cites-vivek-singhs-study-in-decision-against-the-nsa.html; Court judgement (page 9)
- ACM Tech News, University Receives Grant to Prevent Cyberbullying, http://cacm.acm.org/news/185388-university-receives-grant-to-prevent-cyberbullying/fulltext