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EDUCATION

- 2006 – Ph.D. in Computer Science & Engineering (CSE), The Ohio State University
  - *Honors: SBC Presidential Dissertation Award (selected from CSE & ECE)*
- 2002 – M.S. in Computer and Information Science, The Ohio State University
- 1998 – B.Tech. in Computer Science & Engineering (with Honors), IIT Varanasi, India

EMPLOYMENT HISTORY

- July 2020 – current: Director, NIH Biomedical Technology Resource Center (mDOT)
- Jul 2015 – current: Lillian & Morrie Moss Chair of Excellence, University of Memphis
- Sep 2015 – current: Professor, Dept. of Comp. Science, University of Memphis
- Sep 2014 – current: Director, NIH Center of Excellence for Mobile Sensor Data-to-Knowledge (MD2K)
- Jan 2022 – current: CEO & Co-founder, CuesHub, PBC
- Sep 2011 – Aug 2015: Associate Professor with Tenure, Dept. of Comp. Science, University of Memphis
- August 2006 – August 2011: Assistant Professor, Dept. of Computer Science, University of Memphis
- January 2006 – August 2006: SBC Presidential Fellow, The Ohio State University
- September 2000 – December 2005: Graduate Research/Teaching Associate, The Ohio State University
- July 1998 – August 2000: Software Engineer, Siemens Communications Software, Bangalore, India

AWARDS & RECOGNITIONS

- 2021 – Distinguished Alumni Award for Academic Excellence, College of Engineering, Ohio State Univ.
- 2015 – Moss Chair of Excellence in Computer Science, University of Memphis
- 2014 – "Eye of the Tiger", Alumni Association, University of Memphis
- 2013 – Alumni Association Distinguished Research Award, Univ. of Memphis
- 2012 – Distinguished Research Award, College of Arts & Sciences, Univ. of Memphis
- 2011 – Faudree Professorship, University of Memphis
- 2010 – America's Ten Most Brilliant Scientists under 38 ("**Brilliant Ten**"), Popular Science Magazine
- 2010 – First Tennessee Foundation Innovation & Entrepreneurship Fellowship
- 2008 – Early Career Research Award, College of Arts & Sciences, Univ. of Memphis
- 2006 – SBC Presidential Fellowship Dissertation Award, The Ohio State University

PUBLICATIONS (GOOGLE SCHOLAR CITATIONS: 9,760)

1. Yang, M.J., Sutton, S.K., Hernandez, L.M., Jones, S.R., Wetter, D.W., Kumar, S. and Vinci, C., 2023. A Just-In-Time Adaptive intervention (JITAI) for smoking cessation: Feasibility and acceptability findings. Addictive Behaviors, 136 (9 pages).

2. Xu, M., Moreno, A., Nagesh, S., Aydemir, V.B., Wetter, D.W., Kumar, S. and Rehg, J.M., 2022. PulseImpute: A Novel Benchmark Task for Pulsative Physiological Signal Imputation. In Thirty-sixth Conference on Neural Information Processing Systems (NeurIPS) Datasets and Benchmarks Track.

3. Ullah, A., Chatterjee, S., Fagundes, C., Lam, C., Nahum-Shani, I., Rehg, J.M., Wetter, D.W., and Kumar, S., 2022. mRisk: Continuous Risk Estimation for Smoking Lapse from Noisy Sensor Data with Incomplete and Positive-Only Labels. Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies, 6(3), Article 143 (September 2022), pp. 1-29.

4. Saleheen, N., Ullah, M.A., Chakraborty, S., Ones, D., Srivastava, M., and Kumar, S., 2021. WristPrint: Characterizing User Re-identification Risks from Wrist-worn Accelerometry Data. ACM Conference on Computer and Communications Security (CCS).

5. Akther, S., Saleheen, N., Saha, M., Shetty, V. and Kumar, S., 2021. mTeeth: Identifying Brushing Teeth Surfaces Using Wrist-Worn Inertial Sensors. Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies, 5(2), pp.1-25.

6. Hojjatinia, S., Daly, E. R., Hnat, T., Hossain, S. M., Kumar, S., Lagoa, C. M., Nahum-Shani, I., Samiei, S. A., Spring, B., and Conroy, D. E. (2021). Dynamic Models of Stress-smoking Responses Based on High-frequency Sensor Data. npj Digital Medicine, 4(1) [h5-index: 47]

7. Battalio, S.L., Conroy, D.E., Dempsey, W., Liao, P., Menictas, M., Murphy, S., Nahum-Shani, I., Qian, T., Kumar, S. and Spring, B., 2021. Sense2Stop: A micro-randomized trial using wearable sensors to optimize a just-in-time-adaptive stress management intervention for smoking relapse prevention. Contemporary Clinical Trials, 109, p.106534.

8. Kwon, S., Wan, N., Burns, R.D., Brusseau, T.A., Kim, Y., Kumar, S., Ertin, E., Wetter, D.W., Lam, C.Y., Wen, M. and Byun, W., 2021. The validity of MotionSense HRV in estimating sedentary behavior and physical activity under free-living and simulated activity settings. Sensors, 21(4), p.1411.

9. Nahum-Shani, I., Potter, L.N., Lam, C.Y., Yap, J.R., Moreno, A., Stoffel, R., Wu, Z., Wan, N., Dempsey, W., Kumar, S. and Ertin, E., 2021. The mobile assistance for regulating smoking (MARS) micro-randomized trial design protocol. Contemporary Clinical Trials, p.106513.

10. Hernandez, L.M., Wetter, D.W., Kumar, S., Sutton, S.K., & Vinci, C. (2021). Smoking Cessation Using Wearable Sensors: Protocol for a Microrandomized Trial. JMIR Research Protocols, 10(2), e22877.

11. Bari, R., Rahman, M.M., Saleheen, N., Parsons, M.B., Buder, E.H. and Kumar, S., 2020. Automated Detection of Stressful Conversations Using Wearable Physiological and Inertial Sensors. Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies, 4(4), pp.1-23.

12. Nakajima, M., Lemieux, A.M., Fiecas, M., Chatterjee, S., Sarker, H., Saleheen, N., Ertin, E., Kumar, S. and al'Absi, M., 2020. Using novel mobile sensors to assess stress and smoking lapse. International Journal of Psychophysiology, 158, pp.411-418.

13. Kakarmath, S., Esteva, A., Arnaout, R., Harvey, H., Kumar, S., Muse, E., Dong, F., Wedlund, L. and Kvedar, J., 2020. Best practices for authors of healthcare-related artificial intelligence manuscripts. Digital Medicine, Nature Publishing Journal, pp. 1-3.

14. Zhang, Y.C., Zhang, S., Liu, M., Daly, E., Battalio, S., Kumar, S., Spring, B., Rehg, J.M. and Alshurafa, N., 2020. SyncWISE: Window Induced Shift Estimation for Synchronization of Video and Accelerometry from Wearable Sensors. Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies, 4(3), pp.1-26.

15. Shetty, V., Morrison, D., Belin, T., Hnat, T., and Kumar S., 2020. A Scalable System for Passively Monitoring Oral Health Behaviors Using Electronic Toothbrushes in the Home Setting: Development and Feasibility Study. *JMIR Mhealth Uhealth* 2020;8(6):e17347.

16. Wiernik, B.M., Ones, D.S., Marlin, B.M., Giordano, C., Dilchert, S., Mercado, B.K., Stanek, K.C., Birkland, A., Wang, Y., Ellis, B. Yazar, Y., Kostal, J.W., Kumar, S., Hnat, T., Ertin, E., Sano, A., Ganesan, D., Choudhury, T., and al'Absi, M., 2020. Using Mobile Sensors to Study Personality Dynamics. *European Journal of Psychological Assessment*.

17. Dempsey, W., Liao, P., Kumar, S. and Murphy, S.A., 2020. The stratified micro-randomized trial design: sample size considerations for testing nested causal effects of time-varying treatments. *Annals of Applied Statistics, Vol. 14, No. 2, 661-684*.

18. Chatterjee, S., Moreno, A., Lizotte, S.L., Akther, S., Ertin, E., Fagundes, C.P., Lam, C., Rehg, J.M., Wan, N., Wetter, D.W. and Kumar, S., 2020. SmokingOpp: Detecting the Smoking 'Opportunity' Context Using Mobile Sensors. *Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies*, *4*(1), pp.1-26. (Presented at ACM UbiComp 2020)

19. Holtyn, A.F., Bosworth, E., Marsch, L.A., McLeman, B., Meier, A., Saunders, E.C., Ertin, E., Ullah, M.A., Samiei, S.A., Hossain, M. and Kumar, S., 2019. Towards detecting cocaine use using smartwatches in the NIDA clinical trials network: Design, rationale, and methodology. *Contemporary clinical trials communications*, *15*, p.100392.

20. Akther, S., Saleheen, N., Samiei, S.A., Shetty, V., Ertin, E. and Kumar, S., 2019. mORAL: An mHealth model for inferring Oral Hygiene Behaviors in-the-wild using wrist-worn inertial sensors. *Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies*, *3*(1), pp.1-25. (presented at ACM UbiComp 2019)

21. Fröhlich, H., Balling, R., Beerenwinkel, N., Kohlbacher, O., Kumar, S., Lengauer, T., Maathuis, M.H., Moreau, Y., Murphy, S.A., Przytycka, T.M. and Rebhan, M., 2018. From hype to reality: data science enabling personalized medicine. *BMC medicine*, *16*(1), p.150.

22. Vinci, C., Haslam, A., Lam, C.Y., Kumar, S. and Wetter, D.W., 2018. The use of ambulatory assessment in smoking cessation. *Addictive behaviors*, *83*, pp.18-24.

23. Bari, R., Adams, R.J., Rahman, M.M., Parsons, M.B., Buder, E.H. and Kumar, S., 2018. rConverse: Moment by moment conversation detection using a mobile respiration sensor. *Proceedings of the ACM on interactive, mobile, wearable and ubiquitous technologies*, *2*(1), pp.1-27. (presented at ACM UbiComp 2018)

24. Hossain, S.M., Hnat, T., Saleheen, N., Nasrin, N.J., Noor, J., Ho, B.J., Condie, T., Srivastava, M. and Kumar, S., 2017, November. mCerebrum: a mobile sensing software platform for development and validation of digital biomarkers and interventions. In *proceedings of the 15th ACM Conference on Embedded Network Sensor Systems* (SenSys) (pp. 1-14). **Software being used at 12 scientific studies across the country to collect 300 terabytes of wearable sensor data**

25. J. M. Rehg, S. A. Murphy, and S. Kumar (eds.). Mobile Health: Sensors, Analytic Methods, and Applications. *Springer*, 2017. (542 pages)

26. Nilsen, W., Ertin, E., Hekler, E.B., Kumar, S., Lee, I., Mangharam, R., Pavel, M., Rehg, J.M., Riley, W., Rivera, D.E. and Spruijt-Metz, D., 2017. Modeling opportunities in mhealth cyber-physical systems. In *Mobile Health* (pp. 443-453). Springer.

27. Sarker, H., Hovsepian, K., Chatterjee, S., Nahum-Shani, I., Murphy, S.A., Spring, B., Ertin, E., Al'Absi, M., Nakajima, M. and Kumar, S., 2017. From markers to interventions: The case of just-in-time stress intervention. In *Mobile health* (pp. 411-433). Springer.

28. Gao, J., Baskar, S., Teng, D., al'Absi, M., Kumar, S. and Ertin, E., 2017. A new direction for biosensing: RF sensors for monitoring cardio-pulmonary function. In *Mobile Health* (pp. 289-312). Springer.

29. Rahman, M., Ali, N., Bari, R., Saleheen, N., al'Absi, M., Ertin, E., Kennedy, A., Preston, K.L. and Kumar, S., 2017. mDebugger: Assessing and Diagnosing the Fidelity and Yield of Mobile Sensor Data. In *Mobile Health* (pp. 121-143). Springer.

30. Wagner III, B., Liu, E., Shaw, S.D., Iakovlev, G., Zhou, L., Harrington, C., Abowd, G., Yoon, C., Kumar, S., Murphy, S. and Spring, B., 2017, September. eWrapper: operationalizing engagement strategies in mHealth. In *Proceedings of the ACM UbiComp/IWSC Workshop on Mental Health and Wellbeing* (pp. 790-798).

31. Sharmin, M., Weber, T., Sarker, H., Saleheen, N., Kumar, S., Ahmed, S. and Al'Absi, M., 2017, July. Opportunities and challenges in designing Participant-Centric smoking cessation system. In *2017 IEEE 41st Annual Computer Software and Applications Conference (COMPSAC)* (Vol. 1, pp. 835-844).

32. Kumar, S., Abowd, G., Abraham, W.T., Al'Absi, M., Chau, D.H., Ertin, E., Estrin, D., Ganesan, D., Hnat, T., Hossain, S.M. and Ives, Z., 2017. Center of excellence for mobile sensor data-to-knowledge (MD2K). *IEEE pervasive computing*, *16*(2), pp.18-22. (invited)

33. Saleheen, N., Chakraborty, S., Ali, N., Rahman, M.M., Hossain, S.M., Bari, R., Buder, E., Srivastava, M. and Kumar, S., 2016, September. mSieve: differential behavioral privacy in time series of mobile sensor data. In *Proceedings of the 2016 ACM International Joint Conference on Pervasive and Ubiquitous Computing* (ACM UbiComp) (pp. 706-717). **Nominated for best paper award**

34. Chatterjee, S., Hovsepian, K., Sarker, H., Saleheen, N., al'Absi, M., Atluri, G., Ertin, E., Lam, C., Lemieux, A., Nakajima, M. and Spring, B., 2016, September. mCrave: continuous estimation of craving during smoking cessation. In *Proceedings of the 2016 ACM International Joint Conference on Pervasive and Ubiquitous Computing (ACM UbiComp)* (pp. 863-874).

35. Kotz, D., Gunter, C.A., Kumar, S. and Weiner, J.P., 2016. Privacy and security in mobile health: a research agenda. *Computer*, *49*(6), pp. 22-30.

36. Adams, R., Saleheen, N., Thomaz, E., Parate, A., Kumar, S. and Marlin, B., 2016, June. Hierarchical span-based conditional random fields for labeling and segmenting events in wearable sensor data streams. In *International conference on machine learning (ICML)* (pp. 334-343).

37. Sarker, H., Tyburski, M., Rahman, M.M., Hovsepian, K., Sharmin, M., Epstein, D.H., Preston, K.L., Furr-Holden, C.D., Milam, A., Nahum-Shani, I. and Al'Absi, M., 2016, May. Finding significant stress episodes in a discontinuous time series of rapidly varying mobile sensor data. In *Proceedings of the 2016 SIGCHI conference on human factors in computing systems (ACM CHI)* (pp. 4489-4501).

38. Saleheen, N., Ali, A.A., Hossain, S.M., Sarker, H., Chatterjee, S., Marlin, B., Ertin, E., Al'Absi, M. and Kumar, S., 2015, September. puffMarker: a multi-sensor approach for pinpointing the timing of first lapse in smoking cessation. In *Proceedings of the 2015 ACM International Joint Conference on Pervasive and Ubiquitous Computing (ACM UbiComp)* (pp. 999-1010).

39. Hovsepian, K., Al'Absi, M., Ertin, E., Kamarck, T., Nakajima, M. and Kumar, S., 2015, September. cStress: towards a gold standard for continuous stress assessment in the mobile environment. In *Proceedings of the 2015 ACM international joint conference on pervasive and ubiquitous computing (ACM UbiComp)* (pp. 493-504).

40. Sharmin, M., Raij, A., Epstien, D., Nahum-Shani, I., Beck, J.G., Vhaduri, S., Preston, K. and Kumar, S., 2015, September. Visualization of time-series sensor data to inform the design of just-in-time adaptive stress interventions. In *Proceedings of the 2015 ACM International Joint Conference on Pervasive and Ubiquitous Computing (ACM UbiComp)* (pp. 505-516).

41. Kumar, S., Abowd, G.D., Abraham, W.T., al'Absi, M., Gayle Beck, J., Chau, D.H., Condie, T., Conroy, D.E., Ertin, E., Estrin, D. and Ganesan, D., 2015. Center of excellence for mobile sensor data-to-knowledge (MD2K). *Journal of the American Medical Informatics Association (JAMIA)*, *22*(6), pp.1137-1142. (invited)

42. Kennedy, A.P., Epstein, D.H., Jobes, M.L., Agage, D., Tyburski, M., Phillips, K.A., Ali, A.A., Bari, R., Hossain, S.M., Hovsepian, K. and Rahman, M.M., 2015. Continuous in-the-field measurement of heart rate: Correlates of drug use, craving, stress, and mood in polydrug users. *Drug and alcohol dependence*, *151*, pp.159-166.

43. Zheng, Z., Lu, Z., Sinha, P. and Kumar, S., 2014. Ensuring predictable contact opportunity for scalable vehicular internet access on the go. *IEEE/ACM Transactions on Networking*, *23*(3), pp.768-781.

44. Sarker, H., Sharmin, M., Ali, A.A., Rahman, M.M., Bari, R., Hossain, S.M. and Kumar, S., 2014, September. Assessing the availability of users to engage in just-in-time intervention in the natural environment. In *Proceedings of the 2014 ACM International Joint Conference on Pervasive and Ubiquitous Computing (ACM UbiComp)* (pp. 909-920).

45. Rahman, M.M., Bari, R., Ali, A.A., Sharmin, M., Raij, A., Hovsepian, K., Hossain, S.M., Ertin, E., Kennedy, A., Epstein, D.H. and Preston, K.L., 2014, September. Are we there yet? Feasibility of continuous stress assessment via wireless physiological sensors. In *Proceedings of the 5th ACM Conference on Bioinformatics, Computational Biology, and Health Informatics (ACM BCB)* (pp. 479-488).

46. Vhaduri, S., Ali, A., Sharmin, M., Hovsepian, K. and Kumar, S., 2014, September. Estimating drivers' stress from GPS traces. In *Proceedings of the 6th International Conference on Automotive User Interfaces and Interactive Vehicular Applications (Automotive UI)* (pp. 1-8).

47. Hossain, S.M., Ali, A.A., Rahman, M.M., Epstein, E.E.D., Kennedy, A., Preston, K., Umbricht, A., Chen, Y. and Kumar, S., 2014, April. Identifying drug (cocaine) intake events from acute physiological response in the presence of free-living physical activity. In *Proceedings of the 13th International Symposium on Information Processing in Sensor Networks (ACM/IEEE IPSN)* (pp. 71-82).

48. Kumar, S., Al'Absi, M., Beck, J., Ertin, E. and Scott, M., 2014. Behavioral Monitoring and Assessment via Mobile Sensing Technologies. *Behavioral Healthcare Technol.: Using Science-Based Innovations to Transform Practice*, (eds. L. Marsch, S. Lord, J. Dallery), Oxford Press, pp. 27-39, 2014.

49. Kumar, S., Nilsen, W., Pavel, M. and Srivastava, M., 2012. Mobile health: Revolutionizing healthcare through transdisciplinary research. *Computer*, *46*(1), pp.28-35.

50. Kumar, S., Nilsen, W.J., Abernethy, A., Atienza, A., Patrick, K., Pavel, M., Riley, W.T., Shar, A., Spring, B., Spruijt-Metz, D. and Hedeker, D., 2013. Mobile health technology evaluation: the mHealth evidence workshop. *American Journal of Preventive Medicine*, *45*(2), pp.228-236.

51. Nakajima, M., Kumar, S., Wittmers, L., Scott, M.S. and al'Absi, M., 2013. Psychophysiological responses to stress following alcohol intake in social drinkers who are at risk of hazardous drinking. *Biological psychology*, *93*(1), pp.9-16.

52. Gao, J., Ertin, E., Kumar, S. and al'Absi, M., 2013, November. Contactless sensing of physiological signals using wideband RF probes. In *2013 Asilomar Conference on Signals, Systems and Computers* (pp. 86-90). (invited)

53. Ali, A.A., Hossain, S.M., Hovsepian, K., Rahman, M.M., Plarre, K. and Kumar, S., 2012, April. mPuff: automated detection of cigarette smoking puffs from respiration measurements. In *Proceedings of the 11th international conference on Information Processing in Sensor Networks (ACM/IEEE IPSN)* (pp. 269-280).

54. Schatz, B., Marsh, C., Gustafson, D., Patrick, K., Krishnan, J., Kumar, S. and Contractor, N., 2012. Research challenges in measuring data for population health to enable predictive modeling for improving healthcare. *ACM SIGHIT Record*, *2*(2), pp.36-41.

55. Nilsen, W., Kumar, S., Shar, A., Varoquiers, C., Wiley, T., Riley, W.T., Pavel, M. and Atienza, A.A., 2012. Advancing the science of mHealth. *Journal of health communication*, *17*(sup1), pp.5-10. (invited)

56. Zheng, Z., Sinha, P. and Kumar, S., 2011. Sparse WiFi deployment for vehicular internet access with bounded interconnection gap. *IEEE/ACM Transactions on Networking*, *20*(3), pp.956-969.

57. Ertin, E., Stohs, N., Kumar, S., Raij, A., Al'Absi, M. and Shah, S., 2011, November. AutoSense: unobtrusively wearable sensor suite for inferring the onset, causality, and consequences of stress in the field. In *Proceedings of the 9th ACM Conference on Embedded Networked Sensor Systems (ACM SenSys)* (pp. 274-287).

58. Rahman, M.M., Ali, A.A., Plarre, K., Al'Absi, M., Ertin, E. and Kumar, S., 2011, October. mconverse: Inferring conversation episodes from respiratory measurements collected in the field. In *Proceedings of the 2nd Conference on Wireless Health* (pp. 1-10). **Nominated for Best Paper Award**

59. Musthag, M., Raij, A., Ganesan, D., Kumar, S. and Shiffman, S., 2011, September. Exploring micro-incentive strategies for participant compensation in high-burden studies. In *Proceedings of the 13th international conference on Ubiquitous computing (ACM UbiComp)* (pp. 435-444).

60. Plarre, K., Raij, A., Hossain, S.M., Ali, A.A., Nakajima, M., Al'Absi, M., Ertin, E., Kamarck, T., Kumar, S., Scott, M. and Siewiorek, D., 2011, April. Continuous inference of psychological stress from sensory measurements collected in the natural environment. In *Proceedings of the 10th ACM/IEEE international conference on information processing in sensor networks* (ACM/IEEE IPSN) (pp. 97-108). **Nominated for Best Paper Award**

61. Raij, A., Ghosh, A., Kumar, S. and Srivastava, M., 2011, May. Privacy risks emerging from the adoption of innocuous wearable sensors in the mobile environment. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (ACM CHI)* (pp. 11-20).

62. M. Rahman, A. Ali, A. Raij, E. Ertin, M. al'Absi, and S. Kumar, "Demo Abstract: Online Detection of Speaking from Respiratory Measurement Collected in the Natural Environment," *ACM IPSN*, pp. 137-138, 2011.

63. Guha, S., Plarre, K., Lissner, D., Mitra, S., Krishna, B., Dutta, P. and Kumar, S., 2010, November. AutoWitness: locating and tracking stolen property while tolerating GPS and radio outages. In *Proceedings of the 8th ACM Conference on Embedded Networked Sensor Systems (ACM SenSys)* (pp. 29-42). **Nominated for Best Paper Award**

64. Hua, N., Lall, A., Romberg, J., Xu, J., al'Absi, M., Ertin, E., Kumar, S. and Suri, S., 2010. Just-in-time sampling and pre-filtering for wearable physiological sensors: going from days to weeks of operation on a single charge. In *Wireless Health 2010* (pp. 54-63).

65. Zheng, Z., Lu, Z., Sinha, P. and Kumar, S., 2010, March. Maximizing the contact opportunity for vehicular internet access. In *2010 Proceedings IEEE INFOCOM* (pp. 1-9).

66. Shi, Y., Nguyen, M.H., Blitz, P., French, B., Fisk, S., De la Torre, F., Smailagic, A., Siewiorek, D.P., al'Absi, M., Ertin, E. and Kamarck, T., 2010, June. Personalized stress detection from physiological measurements. In *International symposium on quality of life technology* (pp. 28-29).

67. Kumar, S., Lai, T.H., Posner, M.E. and Sinha, P., 2010. Maximizing the lifetime of a barrier of wireless sensors. *IEEE transactions on mobile computing*, *9*(8), pp.1161-1172.

68. Chen, A., Kumar, S. and Lai, T.H., 2009. Local barrier coverage in wireless sensor networks. *IEEE Transactions on Mobile Computing*, *9*(4), pp.491-504.

69. Balister, P., Zheng, Z., Kumar, S. and Sinha, P., 2009, April. Trap coverage: Allowing coverage holes of bounded diameter in wireless sensor networks. In *IEEE INFOCOM 2009* (pp. 136-144).

70. Balister, P. and Kumar, S., 2009, April. Random vs. deterministic deployment of sensors in the presence of failures and placement errors. In *IEEE INFOCOM Miniconference 2009* (pp. 2896-2900).

71. Zheng, Z., Sinha, P. and Kumar, S., 2009, April. Alpha coverage: Bounding the interconnection gap for vehicular internet access. In *IEEE INFOCOM Miniconference 2009* (pp. 2831-2835).

72. Kumar, S., Arora, A. and Lai, T.H., 2008. Maximizing the Lifetime of an Always-On Wireless Sensor Network Application: A Case Study. In *Wireless Sensor Networks and Applications* (pp. 259-283). Springer, Boston, MA.

73. Balister, P., Bollobas, B., Sarkar, A. and Kumar, S., 2007, September. Reliable density estimates for coverage and connectivity in thin strips of finite length. In *Proceedings of the 13th annual ACM international conference on Mobile computing and networking (ACM MobiCom)* (pp. 75-86).

74. Chen, A., Kumar, S. and Lai, T.H., 2007, September. Designing localized algorithms for barrier coverage. In *Proceedings of the 13th annual ACM international conference on Mobile computing and networking (ACM MobiCom)* (pp. 63-74).

75. Kumar, S., Lai, T.H., Posner, M.E. and Sinha, P., 2007, September. Optimal sleep-wakeup algorithms for barriers of wireless sensors. In *2007 Fourth International Conference on Broadband Communications, Networks and Systems (BROADNETS'07)* (pp. 327-336).

76. Kumar, S. and Wang, L., 2007. Ad Hoc and Sensor Networks. *Wiley Encyclopedia of Computer Science and Engineering*, pp.24-32.

77. Lee, H.W. and Kumar, S., 2007. Queueing theory. *Wiley Encyclopedia of Computer Science and Engineering*, pp. 2316-2328.

78. Bai, X., Kumar, S., Xuan, D., Yun, Z. and Lai, T.H., 2006, May. Deploying wireless sensors to achieve both coverage and connectivity. In *Proceedings of the 7th ACM international symposium on Mobile ad hoc networking and computing (ACM MobiHoc)* (pp. 131-142).

79. Arora, A., Ramnath, R., Ertin, E., Sinha, P., Bapat, S., Naik, V., Kulathumani, V., Zhang, H., Cao, H., Sridharan, M. and Kumar, S., 2005, August. Exscal: Elements of an extreme scale wireless sensor network. In *11th IEEE International Conference on Embedded and Real-Time Computing Systems and Applications (RTCSA'05)* (pp. 102-108).

80. Kumar, S., Lai, T.H. and Arora, A., 2005, August. Barrier coverage with wireless sensors. In *Proceedings of the 11th annual international conference on Mobile computing and networking (ACM MobiCom)* (pp. 284-298). **Top Ten Papers of MobiCom'05**

81. Kumar, S., Lai, T.H. and Balogh, J., 2004, September. On k-coverage in a mostly sleeping sensor network. In *Proceedings of the 10th annual international conference on Mobile computing and networking (ACM MobiCom)* (pp. 144-158).

82. Kumar, S., Weide, B.W., Sivilotti, P.A., Sridhar, N., Hallstrom, J.O. and Pike, S.M., 2004. Encapsulating concurrency as an approach to unification. *SAVCBS 2004 Specification and Verification of Component-Based Systems at ACM SIGSOFT/FSE*, p.10.

PRESENTATIONS (CONFERENCES, UNIVERSITIES, FEDERAL AGENCIES)

1. "" NSF Workshop on Crosscutting Research Needs for Digital Twins, 03/31/23.
2. "Closing the Loop Using Imperfect mHealth Digital Biomarkers of Mental Health," IEEE BHI Special Session on Enabling Closed-Loop Technologies for Mental Health: Biobehavioral Sensor Informatics and Just-in-Time Interventions, 10/15/23.
3. "Wearable AI for Discovery, Optimization, and Deployment of Just-in-Time mHealth Interventions," **Keynote Speech,** Research & Engagement Day, Kennesaw State University, 04/13/23.
4. "AI Modeling Challenges in Detecting Self-Reported States from Wearables," UCLA Depression Grand Challenge, 03/31/23.
5. "Stress Monitoring and Intervention Using Wearables," National Association of Science Writers Conference, 10/23/22.
6. "mHealth Risk Estimation from Wearable AI for Smoking Cessation," NSF-NIH Smart Health and Biomedical Research in the Era of Artificial Intelligence and Advanced Data Science Workshop, 10/6/22.
7. "Challenges and Opportunities in Trustworthy AI for Health and Wellness" ACM SIGKDD Trustworthy AI Day, 08/15/22.
8. "Detecting and Characterizing Stress in Daily Life," **Keynote Speech** at IEEE EMBC Workshop on Detection of Stress and Mental Health Using Wearable Sensors, 07/11/2022.
9. "Can Sharing Anonymous Wrist-worn Accelerometry Data Re-identify You," EECS Department, University of California, Irvine, 06/03/2022.
10. "Can Sharing Anonymous Wrist-worn Accelerometry Data Re-identify You," CSE Department, The Ohio State University, 04/29/2022.
11. "Persuasive AI to Improve Health and Wellness," Indo-US Roundtable, 03/24/2022.
12. "Wearable AI for Designing, Optimizing, and Delivering Temporally-Precise mHealth Interventions," mHealth Special Session at International Conference on Network, Systems, and Security (NSySs'21), 12/23/2021.
13. "Discovery, Optimization, and Translation of Temporally-Precise mHealth Interventions," IEEE Digital Health Panel, 9/7/2021 (Host: Iqbal Ahamed)
14. "Synergistic Collaboration Among Computing and Health Researchers," NIH Annual mHealth Training Institute, UCLA, 7/30/2021.
15. "From Sensed Data to Digital Biomarkers – Lessons Learned," NIH Annual mHealth Training Institute, UCLA, 5/24/2021.
16. "Breakout Session on Real-time Multimodal Data", NSF-NIH Workshop on Establishing the Roadmap for Security, Privacy, and Ethics Research in Health, 5/14/21, 5/28/2021, and 6/11/2021.
17. "Experiences in Developing and Deploying ML Models from Wearables," Cyber Physical Health Systems Panel in IEEE CPS-IoT Week, 5/18/2021.
18. "AI-Enabled Precision Healthcare via Wearable or Sharable Devices," Community Health and Preventive Care Panel, Vaibhav Summit, Government of India, 10/24/2020.
19. "AI-Enabled Wearable Devices," Integration of AI in Medical Devices, Vaibhav Summit, Government of India, 10/24/2020.

20. "Identifying Location Micro-Patterns Conducive to Smoking from GPS and Activity Traces," NIH Workshop on Harnessing Novel Data Sources and Technologies for the Study of Social Determinants of Health (SDOH) in Heart, Lung, Blood, and Sleep (HLBS) Disorders, 09/29/2020.
21. "Sensitivity, Specificity, Generalizability, and Reusability Aspirations for Machine Learning (ML) Models in mHealth," **Keynote Speech**, International Workshop on Deep Learning for Wellness Applications Leveraging Mobile Devices and Edge Computing (HealthDL) at ACM MobiSys, 6/16/2020.
22. Panel on "Future Trends of Edge of Cloud-Assisted Mobile Healthcare," HealthDL Workshop at ACM MobiSys, 6/16/2020.
23. "mContain: An App for Personal Tracking of Social Distancing," mPOWER meeting of NSF, NIH, and NIST program officers, 5/28/2020.
24. "Collection, Modeling, and Interpretation of Mobile Sensor Big Data," IEEE Conference on Point of Care Technology (IEEE-POCT), NIH, Bethesda, 11/21/2019.
25. "MD2K Platforms for Computational Modeling of Health and Behavior from Wearable Sensor Data," Generation AI Conference, CIFAR, Toronto, 10/15/2019.
26. "Building Computational Models to Infer Health and Behavior from Wearable Sensor Data," 3M Corporation, Minneapolis, 10/11/2019.
27. "Collecting Emerging mHealth Biomarkers from Daily Life to Assess CVD Risk," CARDIA Steering Committee, NHLBI Cohort from NIH, 2/12/2019.
28. "Towards Sensor-assisted Stress Management," Cognitive Science Seminar, University of Memphis, 10/31/2018.
29. "Mobile Sensor Big Data Software Platforms from MD2K," mHealth Tech Showcase, NIH, 06/04/2018.
30. "Temporally Dense Biomarkers of Daily Behaviors from Mobile Sensors," Brain Behavior Quantification Meeting, National Institutes of Health (NIH), 04/08/2018.
31. "Dynamic Patient Re-stratification Using Mobile Sensors," **Keynote Speech** at Dagstuhl Seminar on Computational Challenges in Personalized Medicine, Dagstuhl, Germany, 11/20/2017.
32. "Mobile Sensor Big Data Challenges in Health, Wellness, and Productivity," University of Utah, 11/06/2017. (Host: Dr. Ross Whitaker)
33. "Mobile Sensor Big Data Challenges in Monitoring and Improving Health, Wellness, and Performance," **Keynote Speech** at Affective Computing and Intelligent Interaction Workshop on Mental Health and Wellbeing, Pain, and Distress, 10/23/2017. (Host: Drs. Rosalind Picard and Akane Sano, MIT)
34. "Mobile Sensor Big Data Challenges in Monitoring and Improving Health, Wellness, and Performance," University of Iowa, 09/28/2017. (Host: Dr. Guadalupe Canahuate)
35. "Collecting High-frequency Mobile Sensor Data for Long-lasting Research Utility," Science of Behavior Change Program (SOBC), NIH, 09/25/2017.
36. "Utility of Collecting High-frequency Mobile Sensor Data in Health Research," Steering Committee meeting of the Multi-ethnic Study of Atherosclerosis (MESA), NHLBI, NIH, 9/08/2017.
37. "Mobile Sensor Data-to-Knowledge (MD2K): Lessons Learned on Data Collection, Modeling, and Validation," Health Data Exploration Summer Institute (HDESI), UC San Diego, 7/19/2017.
38. "Using Mobile Sensors to Self-Monitor and Improve Health, Wellness, and Performance," **Keynote Speech** at ACM MobiSys Workshop on Wearable Systems and Applications (WearSys), 6/19/2017.
39. "Emerging Research Challenges – A Perspective from MD2K Center of Excellence," BDSouthHUB Workshop on Mobile Health, 5/15/2017.
40. "How Big Data on Your Body Can Improve Your Health, Wellness, and Performance," **Plenary Lecture** at the National Conference on Undergraduate Research, 4/7/2017.

41. "Mobile Sensor Data-to-Knowledge (MD2K) in Substance Use Research," Center for Drug Use and HIV Research (CDUHR), New York University, 4/4/2017.

42. "Individualized Mobile Health and Real-life Biosensor Technology within the CTN," Annual Meeting of the NIDA Clinical Trials Network, Rockville, MD, 3/24/2017.

43. "Biobank for mHealth: Collecting High-frequency Mobile Sensor Data for Long-lasting Research Utility," OBSSR Director's Seminar, 11/15/2016. (Host. Dr. William Riley)

44. "Promise and Potential of Mobile Sensor Data-to-Knowledge (MD2K)," BDSouthHUB Roundtable, 11/3/2016.

45. "Development and Validation of Biomarkers from Mobile Sensor Data," Health Data Exploration Institute, UC San Diego, 07/12/2016.

46. "Biomarkers of Health Behaviors from Wearable Wireless Sensors," mHealth Training Institute, UCLA, 08/09/2016.

47. "Center of Excellence for Mobile Sensor Data-to-Knowledge (MD2K)," Memphis Area Psychological Association, 12/10/2015.

48. "Perils and Promise of mHealth Big Data," Scripps Translational Science Institute Conference on Evidence Driven mHealth, 10/2/2015.

49. "Center of Excellence for Mobile Sensor Data-to-Knowledge (MD2K)," Mayo Clinic Individualized Medicine Conference, 9/23/2015.

50. "Mobile Sensor Big Data Challenges in Realizing Precision Medicine," Microsoft Corporation, 9/1/2015. (Host: Dr. Harry, Shum, Senior VP and CTO)

51. "Incorporating Mobile Exposure in mHealth Precision Medicine," NIEHS Exposome Webinar Series, 8/4/2015. (Host: Dr. David Balshaw)

52. "Mobile Health (mHealth) Platforms for the Era of Precision Medicine," Intel Corporation, 6/30/2015. (Host: Dr. Arindam Saha)

53. "A Computer Scientist's Journey in mHealth," **Keynote Speech**, Smart and Connected Health Aspiring PI Meeting, National Science Foundation (NSF), 6/29/2015. (Host: Dr. Thurmon Lockhart)

54. "Towards Sensor-triggered Mobile Health Interventions," **Keynote Speech**, Annual Meeting of the Society for Ambulatory Assessment, 6/26/2015. (Host: Dr. Joshua Smyth)

55. "Sensor-triggered Just-in-time (JIT) Mobile Health Interventions – A Transdisciplinary Research Opportunity," OBSSR 20th Anniversary Celebrations, NIH, 6/25/2015. (Host: Dr. William Riley)

56. "Detecting Cocaine Use from Wireless ECG Worn in Field Studies," NIDA Webinar, 5/21/2015. (Host; Dr. Betty Tai)

57. "Improving the Temporal Precision of Precision Medicine via Mobile Health," iDASH Webinar, UC San Diego, 5/15/2015. (Host: Dr. Lucila Ohno-Machado)

58. "Improving the Temporal Precision of Precision Medicine via Mobile Health," St. Jude's Children Research Hospital, 5/4/2015. (Host: Dr. Greg Armstrong)

59. "Is the User Ready to Receive A Sensor-triggered Just-in-time Mobile Health Intervention?," Annual Meeting of the Society for Behavioral Medicine (SBM), 4/24/2015.

60. "Continuous Measurement of Stress – What Makes Driving Stressful?," Annual Meeting of the Society for Behavioral Medicine (SBM), 4/23/2015.

61. "Designing Sensor-triggered Just-in-time Mobile Health Interventions," Wayne State University, 4/21/2015. (Host: Dr. Weisong Shi)

62. "Addressing Addictive Behaviors Using Sensor-Triggered Just-in-Time Mobile Health Interventions," **Keynote Speech**, NIDA Clinical Trials Network, Gaithersburg (MD), 4/16/2015

63. "Designing Sensor-Triggered Just-in-Time Interventions," **Keynote Speech**, 14th Annual UT/KBRIN Bioinformatics Summit, Buchanan (TN), 3/21/2015.

64. "Measuring Stress & Addictive Behaviors Using Mobile Physiological Sensors," ENAR Meeting, Miami, 3/16/2015

65. "Testing the Devices: Using the Cohort to Assess Efficacy," NIH Precision Medicine Workshop, NIH Campus, 2/12/2015

66. "Sensor Triggered Just-in-Time Mobile Health Interventions – Opportunities & Challenges," University of Michigan, January 2015. (Host: Dr. Susan Murphy)

67. "Sensor Triggered Just-in-Time Mobile Health Interventions – Opportunities & Challenges," Dartmouth College, January 2015. (Host: Dr. David Kotz)

68. "Computing Grand Challenges in Future Mobile Health Systems and Applications – Introduction & Chair's Address," NIH Campus, October 2014

69. "mHealth – Cardiovascular Health Scenarios," ACM SIGKDD Workshop on Big Data Opportunities & Challenges in Mobile Health, New York City, August 2014. (Hosts: Dr. Wendy Nilsen, Dr. Richard Conroy, Dr. Mary Rodgers, NIH)

70. "Cyber Physical Systems Models for Just-in-Time Care Delivery with Mobile Health Sensors," Mini-symposium #19, 36th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC), Chicago, August 2014. (Host: Dr. David Corman, NSF)

71. "Inferring Stress and Addictive Behaviors Using Mobile Sensors," Mini-symposium #41, 36th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC), Chicago, August 2014. (Host: Dr. Rich Fletcher, MIT)

72. "Continuous Measurement of Stress in the Mobile Environment via Wireless Physiological Sensors," NIH Annual Meeting of the Science of Behavior Change (SOBC), June 2014. (Host: Dr, Jonathan King, NIA, NIH)

73. "State-of-the-Science in Mobile Health," AAAS Workshop on mHealth and Law, June 2014. (Host: Dr. Mark Frankel, AAAS)

74. "Predicting Smoking Abstinence via Mobile Monitoring of Stress and Social Context," NIH OppNet Sleep & Stress Meeting, May 2014. (Hosts: Dr. Rosalind King & Dr. Catherine Stoney, NIH)

75. "Computational Modeling for Automated Detection of Cocaine Use from ECG Response," Annual Meeting of the Society for Behavioral Medicine (SBM), Panel#16, Philadelphia, PA, April 2014. (Host: Dr. Rich Fletcher, MIT)

76. "Identifying Drug (Cocaine) Intake Events from Acute Physiological Response in the Presence of Free-living Physical Activity," ACM IPSN, Berlin, Germany, April 2014.

77. "Computational Modeling of Human Behaviors from Mobile Sensors," Marquette University, April 2014 (Host: Dr. Sheikh Iqbal Ahamed)

78. "Realizing the Vision of P5 Medicine via Mobile Health – Application to Cardiac Care," UCLA mHealth Symposium, March 2014. (Host: Dr. Vivek Shetty)

79. "Computational Modeling of Behaviors from Mobile Sensors: A Case Study of Modeling Cocaine Use Response in ECG," NIDA Intramural Research Program, NIH, Feb 2014. (Host: Dr. Kenzie Preston)

80. "Cyber Physical System Models for Just-in-time Care Delivery with Mobile Health Sensors," NSF Workshop on Research Frontiers in Medical Cyber Physical Systems, Feb 2014.

81. "Computational Modeling of Behaviors from Mobile Measurement of Physiology," Duke Medical School, Dec 2013. (Host: Dr. Bernard Fuemmeler)

82. "Behavior Assessment with Mobile Sensors," NIH mHealth Training Institute, mHealth Summit, Dec 2013.

83. "Computational Modeling of Behaviors from Mobile Measurement of Physiology," **Distinguished Lecture Series**, Computer Science & Engineering, UC San Diego, Dec 2013. (Host: Prof. Rajesh Gupta)

84. "Understanding Data Yield in Mobile Health User Studies with Wearable Sensors," The Ohio State University, Oct 11, 2013. (Host: Prof. Ten H. Lai)

85. **"**Just-in-Time mHealth Intervention with Physiological Sensors,**"** First International Symposium on Computational Behavioral Science, Kanagawa, Japan. Sep 2013.

86. **"**Assessment of Behavioral Health with Physiological Sensors,**"** Mobile Data Repository and Analysis Platforms, iDASH Meeting, UC San Diego. Sep 2013.

87. **"**The Future of Health IT for Behavioral Health – Biosensors,**"** **White House Speech** at the Technology Innovations for Substance Abuse and Mental Health Treatment Conference. Sep2013.

88. **"**Realizing Just-in-time mHealth Intervention via Mobile Assessment of Health, Behavior and Context – Opportunities and Challenges,**"** **Keynote Speech** at the 6th Scientific Meeting of the International Society for Research on Internet Interventions (ISRII), May 2013.

89. "Revolutionizing Healthcare via Democratization of Mobile Health – An Agenda for Computing Research," University of Texas, Arlington, Feb 2013 (Host: Prof. Sajal Das)

90. "Revolutionizing Healthcare via Democratization of Mobile Health – An Agenda for Computing Research," Washington University in St. Louis, Feb 2013 (Host: Prof. Chenyang Lu)

91. "Mobile Measurement of Behavioral and Social Health at Population Scale – Implications for Computing Research," **Keynote Speech** at the 10th IEEE/IFIP International Conference on Embedded and Ubiquitous Computing and 15th IEEE International Conference on Computational Science and Engineering, Paphos, Cyprus, 12/5/2012

92. "Measurement of Behavioral and Social Health at Population Scale," Auburn University, 9/30/2012 (Host: Prof. Prathima Agrawal)

93. "Measurement of Behavioral and Social Health at Population Scale," University of Illinois at Urbana Champaign (UIUC), 9/13/2012 (Host: Prof. Bruce Schatz)

94. "Measurement of Behavioral and Social Health at Population Scale," Dartmouth College, 05/23/2012 (Host: Prof. David Kotz)

95. "Measurement of Behavioral and Social Health at Population Scale," mHealth Extravaganza Lecture Series, National Institutes of Health (NIH), 05/03/2012 (Host: Dr. Wendy Nilsen, OBSSR)

96. "mPuff: Automated Detection of Cigarette Smoking Puffs from Respiration Measurements," ACM/IEEE IPSN Conference, Beijing, China, 04/19/2012

97. "Mobile Measurement of Behavioral and Social Health at Population Scale – Implications for Computing Research," **Keynote Speech** at the 2nd Mobile Sensing Workshop, IEEE/ACM Information Processing in Sensor Networks (IPSN) Conference, Beijing, China, 04/16/2012

98. "Automated Assessment of Naturally Occurring Conversations," Symposium 17: Device-Enabled Measurement of Health Behaviors in Real-time (SY17), Annual Meeting of Society for Behavioral Medicine (SBM), New Orleans, 04/12/2012

99. "Measurement of Behavioral and Social Health at Population Scale," Electrical Engineering and Computer Engineering, 03/20/2012 (Host: Prof. Chrysanthe Preza)

100. "Measurement of Behavioral and Social Health at Population Scale," Georgia Institute of Technology, 03/07/2012 (Host: Prof. Jim Regh)

101. "Measurement of Behavioral and Social Health at Population Scale," Biomedical Engineering, 01/27/2012 (Host: Prof. Erno Lindner)

102. "Measurement of Behavioral and Social Health at Population Scale," NSF Workshop on Measuring Population Health, Washington, D.C., 01/12/2012

103. "mHealth Evidence Workshop: Evaluating the Efficacy and Safety of Mobile Health," mHealth Summit, Washington, D.C., 12/06/2011

104. "Addressing Stress and Addictive Behavior in the Natural Environment Using AutoSense," University of California, Los Angeles, 11/4/2011 (Host: Prof. Mani Srivastava)

105. "Addressing Stress and Addictive Behavior in the Natural Environment Using AutoSense," University of Washington, 10/31/2011 (Host: Prof. David McDonald)

106. "Addressing Stress and Addictive Behavior in the Natural Environment Using AutoSense," University of California, San Diego, 10/11/2011 (Host: Prof. Kevin Patrick)

107. "Addressing Stress and Addictive Behavior in the Natural Environment Using AutoSense," University of Pennsylvania, 10/19/2011 (Host: Prof. Insup Lee)

108. "Addressing Stress and Addictive Behavior in the Natural Environment Using AutoSense," Washington University in St. Louis, 09/30/2011 (Host: Prof. Chenyang Lu)

109. "mHealth Evidence Workshop - Exploring Innovative Methods to Evaluate Efficacy and Safety of Mobile Health," Chair's Address, mHealth Evidence Meeting, Washington D.C., 8/16/2011.

110. "Addressing Stress and Addictive Behavior in the Natural Environment Using AutoSense," Duke University, 04/13/2011 (Host: Prof. Romit Roy Choudhury)

111. "Scaling Personal Stress Assistance in Natural Environment," National Science Foundation Workshop on Pervasive Computing at Scale, Seattle, WA, 1/27/2011.

112. "Addressing Stress and Addictive Behavior in the Natural Environment Using AutoSense," The Ohio state University, 10/28/2010 (Host: Prof. Ten H. Lai)

113. Integration of novel methods to assess effects of stress and alcohol use," Annual Meeting of the Society for Prevention Research (SPR), Denver, CO, June 2010.

114. Integration of novel methods to assess effects of stress and alcohol use," Annual Convention of the American Psychosomatic Society Meeting, Portland, OR, March 2010.

115. "AutoSense: A Wireless Sensor System to Quantify Psychosocial Stress and Alcohol in Natural Environments," New Frontiers in Measurement: Phenotypes, Endophenotypes, and Envirotypes for Genetic and Behavioral Studies of Nicotine Dependence, at the Annual Conference of the Society for Research on Nicotine and Tobacco (SRNT), Feb 2010 (Host: Dr. Kay Wanke, OBSSR, NIH)

116. "Enabling Physical, Emotional, and Social Well-Being Through Personalized Sensing in Natural Environments," National Science Foundation Workshop on Future Directions in Networked Sensing: Fundamentals and Applications, Arlington, VA, 11/12/2009.

117. "AutoSense: A Wireless Sensor System to Quantify Personal Exposures to Psychosocial Stress and Alcohol in Natural Environments," International Society for Exposure Sciences (ISES), Minneapolis, MN, 11/05/2009.

118. "Stress and Addiction: Integration of Novel Assessment Methods," within the Symposium titled 'Gene-Environment Interplay in Stress and Health: Network on Exposure to Psychosocial Stress and Addictive Substances', Annual Convention of the Association for Psychological Sciences. San Francisco, CA, 05/22/2009.

119. "Wireless Sensor Networks: A New Revolution in Computing Coming Your Way," National Institute of Technology, Jamshedpur, India, 5/26/2009 (Host: Prof. R. K. Chaudhary)

120. "Trap Coverage: Allowing Coverage Holed of Bounded Diameter in Wireless Sensor Networks," IEEE INFOCOM, Rio De Janeiro, Brazil, 04/21/2009.

121. "Random vs. Deterministic Deployment of Sensors in the Presence of Failures and Placement Errors," IEEE INFOCOM, Rio De Janeiro, Brazil, 04/20/2009.

122. "AutoSense: A Wireless Sensor System to Quantify Psychosocial Stress and Alcohol in Natural Environments," National Institute on Alcohol Abuse and Alcoholosim (NIAAA), National Institutes of Health (NIH), 1/12/2009 (Host: Dr. Marcia Scott, NIAAA, NIH)

123. "Coverage and Connectivity in Wireless Networks: the Journey from Percolation to Reliable Density Estimates", Invited Talk, First Workshop on the Theory of Ad-Hoc and Sensor Networks (ThASN), IEEE MASS Conference, 9/29/2008.

124. "Optimal Sleep Wakeup Algorithms for Barriers of Wireless Sensors," Invited (live video) Lecture to a joint course of Ohio State University and University of Cincinnati, 10/15/2007 (Host: Prof. Prasun Sinha)

125. "Coverage and Connectivity in Wireless Networks: the Journey from Percolation to Reliable Density Estimates", Clemson University, 11/9/2007 (Host: Prof. Jason Hallstrom)

126. "Coverage and Connectivity in Wireless Networks: the Journey from Percolation to Reliable Density Estimates", Georgia Institute of Technology, 10/17/2007 (Host: Prof. Jun Xu)

127. "Optimal Sleep Wakeup Algorithms for Barriers of Wireless Sensors," IEEE BROADNETS, Raleigh, NC, 2007.

128. "Barrier Coverage with Wireless Sensors," University of Memphis, 2/24/2006.

129. "On k-Coverage in a Mostly Sleeping Sensor Network," ACM MobiCom, Philadelphia, PA, 2004.

AWARDED GRANTS & CONTRACTS ($50 MILLION) (*AMOUNT LISTED ARE SUBAWARD TO DR. KUMAR FOR NON-LEAD GRANTS AND TOTAL AMOUNT FOR GRANTS WITH DR. KUMAR AS THE LEAD PI*)

Title	Sponsor	Amount	Year	Institutions
P41: mHealth Center for Discovery, Optimization, and Translation of Temporally-Precise Interventions (mDOT) (**PI**)	NIH	$5.9 million	2020-25	Georgia Tech, Harvard, Memphis (lead), Ohio State, UCLA, UCSF, and UMass Amherst
CC* Integration-Large: mGuard: A Secure Real-time Data Distribution System with Fine-Grained Access Control for mHealth Research (Co-PI)	NSF	$235k (out of $825k)	2020-23	Memphis, UCLA
CRI: CI: EN: Collaborative Research: mResearch: A Platform for Reproducible and Extensible Mobile Sensor Big Data Research (**PI**)	NSF	$1.75 million	2018-2023	Georgia Tech, UCLA, Ohio State, UMass Amherst, Memphis (lead)

Supplement to MD2K: Using Mobile Sensors to Predict Opioid Use in Patients with Sickle Cell Disease" (**PI**)	NIH	$313k	2018-2020	Johns Hopkins, Memphis (lead)
U01: Novel Use of mHealth Data to Identify States of Vulnerability and Receptivity to JITAI's (Co-I)	NIH	$347k	2018-2023	Georgia Tech, Ohio State, Memphis, Utah, Michigan (lead)
R01: Affective Science and Smoking Cessation: Real Time Real World Assessment (Co-I)	NIH	$460k	2018-2023	Georgia Tech, Ohio State, Memphis, Utah (lead)
mPerf: A Theory-driven Approach to Model and Predict Everyday Job Performance Using Mobile Sensors (**PI**)	IARPA	$14 million	2017-2020	Cornell, Minnesota, Ohio State, UCLA, UMass Amherst
Open mHealth: Community-Based Data and Metadata Standards for Mobile Health (Co-I)	NIH	$138k	2017-2021	Georgia Tech, Memphis, Open mHealth, UCSF (lead)
SCH: INT: Collaborative Research: Enhancing Context-Awareness and Personalization for Intensively Adaptive Smoking Cessation Messaging Interventions (Co-PI)	NSF	$196k	2017-2021	UMass Amherst (lead)
Applying Novel Technologies and Methods to Inform the Ontology of Self-Regulation	NIH	$79k	2017-2018	Dartmouth (lead), Minnesota, Ohio State
CIF21 DIBBS: EI: mProv: Provenance-based Data Analytics Cyberinfrastructure for High-Frequency Mobile Sensor Data (**PI**)	NSF	$4 million	2016-2022	Memphis (lead), U Penn, UCLA, UCSF
R00: Applying mHealth to Tobacco-related Health Disparities: Enhancing aspects of Resiliency to aid Cessation Efforts (Co-I)	NIH	$107k	2017-2021	Moffitt Cancer Center (lead)
Supplement to MD2K: Combining Genomics and Mobile Data Around Physical Activity (**PI**)	NIH	$50k	2016-2018	UCSF, Memphis
Supplement to MD2K: Count Everything (**PI**)	NIH	$97k	2016-2017	UCSF, Memphis
CTN: Toward Detecting Cocaine Use using Smartwatches in the NIDA Clinical Trials Network (Co-PI)	NIH	$112k	2016-2018	Dartmouth (lead), Ohio State, Johns Hopkins

R01: ROBAS: A multimodal Sensor System for Remote Assessment of Oral Health Behavior (Co-I)	NIH	$498k	2015-2020	Ohio State, Memphis, UCLA (lead)
R01: Eliminating Tobacco-Related Disparities among African American Smokers (Co-I)	NIH	$847k	2015-2020	Georgia Tech, Ohio State, Memphis, Utah (lead)
R01: Socioeconomic Status, Stress, and Smoking Cessation (Co-I)	NIH	$806k	2015-2020	Georgia Tech, Ohio State, Memphis, Utah (lead)
U54: Center of Excellence for Mobile Sensor Data-to-Knowledge (MD2K) (**PI**) (*A National Big Data Centers of Excellence funded under NIH's BD2K initiative*)	NIH	$10.8M	2014-2020	Cornell Tech, Harvard, Georgia Tech, Michigan, Memphis, Ohio State, Utah, NWU, UCLA, UCSD, UCSF, UMass Amherst, West Virginia
NSF-NIH National Workshop on Computing Challenges in Future Mobile Health (mHealth) Systems and Applications (**PI**)	NSF	$50k	2014-2015	Memphis
R01: Predicting Smoking Abstinence via Mobile Monitoring of Stress and Social Context (**PI**)	NIH	$1.3M	2012-2015	Ohio State, Minnesota, Memphis
SHB: Type I (EXP): Collaborative Research: EasySense: Contact-less Physiological Sensing in the Mobile Environment Using Compressive Radio Frequency Probes (**PI**)	NSF	$600k	2012-2015	Ohio State, Minnesota, Memphis
CSR: Large: Collaborative Research: Enabling Privacy-Utility Trade-offs in Pervasive Computing Systems (co-**PI**)	NSF	$95k	2012-2014	UCLA, UC Irvine, Memphis
mHealth Evidence National Meeting (**PI**)	RWJF Found.	$25k	2011-2012	Memphis
mHealth Evidence National Meeting (**PI**)	McKesson Found.	$25k	2011-2012	Memphis
First TN Innovation and Entrepreneurship Fellowship (**PI**)	First TN Found.	$24k	2010-2011	Memphis
Alcohol Measurements in AutoSense: From Days to Weeks in the Field (**PI**)	NIH	$173k	2010-2011	Ohio State, Minnesota, Giner Inc., Memphis
Making AutoSense robust for Everyday Wearing: A Field Test in Illicit Drug Users (**Co-PI**)	NIH	$132k	2010-2011	NIDA (NIH), UMN, Ohio State, Memphis

NetSE: Large: Collaborative Research: FieldStream: Network Data Services for Exposure Biology Studies in Natural Environments (**PI**)	NSF	$2.7M	2009 – 2013	CMU, UCLA, UMass, Georgia Tech, Memphis
Personalized Stress Inferencing in AutoSense (**PI**)	NIH	$238k	2009-2010	Ohio State, UMN, CMU, Pittsburgh, Memphis
Automated Wireless Measurement of Pulse Wave Velocity in AutoSense (**PI**)	NIH	$68k	2008 – 2009	Ohio State, Memphis
AutoWitness: Detecting and Tracking Burglars Using a Sparse Sensor Network (**PI**)	FIT	$386k	2008-2011	Memphis
U01: AutoSense: Quantifying Personal Exposures to Addictive Substances and Psychosocial Stress (**PI**)	NIH	$1.66M	2007 – 2012	Ohio State, UMN, Guided Therapeutics, Memphis
NeTS-NOSS: Collaborative Research: Doing More with Less: Tracking Movements Using a Sparse Sensor Network (**PI**)	NSF	$500k	2007-2010	Ohio State, Memphis
Foundations of Coverage and Connectivity for Wireless Sensor Networks Deployed in Thin Strips (**PI**)	NSF	$350k	2007-2010	Memphis

MENTORING

- NIH K Award Mentor for Dr. Nabil Alshurafa (Northwestern) and Ed Boyer (Harvard)
- Supervise ten staff members (including four postdoctoral staff) at MD2K Center of Excellence
- Current Ph.D. students (10) – Md. Azim Ullah, Mithun Saha, Sayma Akhter, Sameer Neupane, and Hosneara Ahmed.
- Notable Alumni:
  - Dr. Soujanya Chatterjee (Ph.D., 2021) – Applied Scientist, Amazon
  - Dr. Rummana Bari (Ph.D., 2020) – Digital Health Data Engineer, Johnson & Johnson
  - Dr. Nazir Saleheen (Ph.D., 2020) – Software Engineer, Google
  - Dr. Hillol Sarker (Ph.D., 2017) – Data Scientist, Sanofi
  - Dr. Syed Monowar Hossain (Ph.D., 2016) –Software Engineer, Facebook
  - Dr. Mahbubur Rahman (Ph.D., 2016) –Research Engineer Staff II, Samsung Research
  - Dr. Amin Ahsan Ali (Ph.D., 2014) – Associate Professor, CSE, Independent University, Bangladesh
  - Dr. Moushumi Sharman (Postdoc: 2013 – 2015) – Tenure-track Asst. Prof. at Western Washington
  - Dr. Karen Hovsepian (Postdoc: 2011 – 2013) – Senior Applied Scientist, Amazon
  - Dr. Andrew Raij (Postdoc: 2009-2010) – Hardware Development Manager, Universal Creative

- ▪ Dr. Kurt Plarre (Postdoc: 2008 – 2011) – Data Analyst at ALMA observatory in Chile
- ▪ Somnath Mitra (M.S., 2012) – Member of Technical Staff, eBay
- ▪ Bhagavathy Krishna (M.S., 2012) – Lead Software Engineer/Product Manager, Apple
- ▪ Animikh Ghosh (M.S., 2010) – Senior Technology Architect, Infosys

TEACHING EXPERIENCE

- COMP 4270/6270: Introduction to Operating Systems (UG, 10 semesters, Spring 2007 to Spring 2014); UofM
- COMP 7/8313: Network Design and Performance Analysis (G, Fall 2006 to Fall 2011); UofM
- COMP 3825: Networking and Information Assurance (UG, 1 semester); UofM
- CSE 222: Development of Software Components (UG, 6 quarters); Ohio State
- CSE 221: Software Development Using Components (UG, 4 quarters); Ohio State
- CSE 100: Introduction to Computing Technology (UG, 1 quarter); Ohio State

PROFESSIONAL MEMBERSHIPS

- Senior Member, ACM; ACM SIGMOBILE, ACM SIGBED; ACM SIGCHI
- Senior Member, IEEE; IEEE Computer Society, IEEE Communications Society

SERVICE (EXTERNAL)

- Scientific Board Member, NSF Nanosystems Engineering Research Center (ERC) for Advanced Self-Powered Systems of Integrated Sensors and Technologies (ASSIST)
- Independent Experts Committee, PRISMS Initiative ($28 million), NIBIB/NIH, 2017-2019
- Associate Editor, Nature Digital Medicine, 2017-.
- Associate Editor, Proceedings of ACM Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT), 2016-.
- TPC member for ACM MobiSys, ACM UbiComp, ACM SenSys, ACM IPSN, IEEE PerCom, IEEE INFOCOM, ACM Wireless Health, IEEE BSN, BodyNets, IEEE ICDCS, IEEE MASS, IEEE SECON, IEEE ICPP, ICDCN, IEEE ICCCN, etc.
- GAO Panel on Experts in Internet of Things, National Academies, 5/2016.
- Core Faculty Mentor for NIH mHealth Summer Institutes (2012-present).
- Advisory Committee for BDSouthHUB mHealth Workshop, May 2017.
- Steering Committee for NSF Smart and Connected Health Visioning Workshop, March 2017.
- Steering Committee for CCC Workshop on Discover and Innovation in Smart and Pervasive Health, Dec 2016.
- Advisor, Center for Technology and Behavioral Health (PI: Lisa Marsch), Dartmouth University, 2016.
- Member of the mHealth Planning Committee for the United States' Precision Medicine Initiative, Jan/Feb 2015.
- Co-chair and co-organizer for NSF-NIH National Workshop on Computing Challenges in Future Mobile Health (mHealth) Systems and Applications, 10/2014.

- Advisor, AAAS National Study on mHealth and Law, 2014-15.

- Advisory Board Member, Otsuka America Pharmaceutical Inc., 2014-19.

- Health Informatics Track Co-Chair of the ACM BCB Conference, 2014.

- Invited to speak at the White House on the future of biosensors (9/2013).

- Invited to the NIH Director's mTHINK meeting as an mHealth thought leader (2/2013).

- Expert panel to judge "My Air, My Health Challenge", $160k in prizes from US Department of Health and Human Services (HHS) and Environmental Protection Agency (EPA), 2012.

- Chair for the "mHealth Evidence" meeting – jointly hosted by NIH, NSF, Robert Wood Johnson Foundation, and McKesson Foundation.

- Founding TPC Co-chair & Steering Committee member for ACM mHealthSys 2011 workshop (held at ACM SenSys'11).

- Organizing Committee, ACM SenSys'11.

- TPC Co-chair for NetHealth Workshop 2012 (held at ACM COMSNETS'12).

- TPC Co-chair for IEEE International Conference on Mobile Ad-Hoc and Sensor Networks (MSN) 2011.

- TPC Co-chair for Wireless Networks and Emerging Technologies (WNET) track of IEEE ICCCN 2010.

- Steering committee co-chair for the NEPSAS subgroup of the Genes Environment & Health Initiative (GEI) at NIH (2010-12).

- Reviewer for IEEE/ACM Transactions on Networking, IEEE/ACM Transactions on Mobile Computing, IEEE/ACM Transactions on Sensor Networks, IEEE Transactions on Parallel and Distributed Systems, IEEE Transactions on Wireless Communications, IEEE Transactions on Computers, IEEE Transactions on Information Theory, IEEE Communications Letters, ACM Journal of Wireless Networks, ACM Transactions on Autonomous and Adaptive Systems, Elsevier Ad Hoc Networks Journal, Journal of Parallel and Distributed Systems, Elsevier Journal of Parallel and Distributed Computing, Elsevier Journal of Computer Networks, and several others.

- Served on Proposal Review Panels for NSF (2008-present) and NIH (2009-present).

PROFESSIONAL SERVICE (INTERNAL)

- University Research Council, 2018-

- Faculty Search Committee (Chair), Computer Science, 2015-

- Provost Search Committee, University of Memphis, 2014

- Vice Provost' Research Capacity Analysis Implementation, 2013-14

- Vice Provost's Advisory Committee for Research, 2012-13

- Chair for the department self-assessment committee, 2006-2012

- University-wide STEM committee, 2008-2010

- Graduate Curriculum Committee, 2010-

- Graduate Admission Committee, 2011-

- Colloquium Committee, 2006-2008