

Varun Mishra

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Research Interest

Ubiquitous computing, mobile sensing, mental health modeling, context awareness, state of receptivity, user interruptibility, and data mining.

My current research interest broadly focuses on development of novel mobile sensing and intervention systems for smartphones and wearable devices. I am particularly interested in sensing mental and behavioral health conditions, e.g., stress, anxiety and mood, and providing meaningful and impacting interventions.

Education

Sept '15 – Present	Ph.D. , Computer Science Dartmouth College Advisor: Prof. David Kotz	Hanover, NH
Aug '11 – Jun '15	B.Tech. , Computer Science and Engineering Shiv Nadar University <i>Minor in Mathematics</i>	Uttar Pradesh, India

Research Experience

Sept '15 – Present	Research Assistant <i>Dartmouth College</i>	Hanover, NH
	My work involves development of novel sensing technologies using smartphones, smart-watches, and custom wearables, to assist in mental health sensing, and context aware intervention delivery, based on the the users' availability and receptivity.	
Jun '18 – Sept '18	Research Intern <i>IBM Research</i>	Yorktown Heights, NY
	My work involved development of novel context and physiological sensing methodologies to advance mental and behavioral health sensing, specifically for the case of Mental Stress Sensing.	
Jan '15 – Jun '15	Research Intern <i>Siemens</i>	Bengaluru, India
	My work focused on analyzing the meta data involved with a new software project development, and predicting the defects and risks the developers could encounter over the course of the software development life-cycle	
Feb '14 – Nov '14	Undergraduate Research Assistant <i>Shiv Nadar University</i>	Uttar Pradesh, India
	I was involved in the project titled <i>HumanSense: Towards context aware sensing, inference and actuation for applications in Energy and Healthcare</i> . I worked on developing novel sensing applications for crowd-sourcing of air temperature, air quality, and atmospheric pressure.	
May '13 – Jun '13	Research Intern <i>Indian Institute of Technology</i>	Delhi, India
	Developed a Natural Language Processing application to read Software Requirement Specification and generate UML Class diagrams.	

Publications

Under Review

V. Mishra, G. Pope, S. Lord, S. Lewia, B. Lowens, K. Caine, S. Sen, R. Halter, and D. Kotz. Under Submission, "The case for a commodity hardware solution for stress detection," *ACM Transactions on Computing for Healthcare (HEALTH)*,

Proceedings

- V. Mishra**, T. Hao, S. Sun, K. Walter, M. Ball, C.-H. Chen, and X. Zhu. Oct. 2018, “Investigating the role of context in perceived stress detection in the wild,” in *Proceedings of the ACM International Joint Conference on Pervasive and Ubiquitous Computing Adjunct (UbiComp’18)*, ACM. DOI: [10.1145/3267305.3267537](https://doi.org/10.1145/3267305.3267537).
- V. Mishra**, G. Pope, S. Lord, S. Lewia, B. Lowens, K. Caine, S. Sen, R. Halter, and D. Kotz. Oct. 2018, “The case for a commodity hardware solution for stress detection,” in *Proceedings of the ACM International Joint Conference on Pervasive and Ubiquitous Computing Adjunct (UbiComp’18)*, ACM. DOI: [10.1145/3267305.3267538](https://doi.org/10.1145/3267305.3267538).
- G. C. Pope, **V. Mishra**, S. Lewia, B. Lowens, D. Kotz, S. Lord, and R. Halter. Mar. 2018, “An Ultra-Low Resource Wearable EDA Sensor Using Wavelet Compression,” in *Proceedings of the IEEE Conference on Body Sensor Networks (BSN)*, pp. 193–196. DOI: [10.1109/BSN.2018.8329691](https://doi.org/10.1109/BSN.2018.8329691).
- G. M. Harari, S. R. Müller, **V. Mishra**, R. Wang, A. T. Campbell, P. J. Rentfrow, and S. D. Gosling. 2017, “An Evaluation of Students’ Interest in and Compliance With Self-Tracking Methods: Recommendations for Incentives Based on Three Smartphone Sensing Studies,” *Social Psychological and Personality Science*, pp. 1–14.
- V. Mishra**, B. Lowens, S. Lord, K. Caine, and D. Kotz. 2017, “Investigating Contextual Cues As Indicators for EMA Delivery,” in *Proceedings of the 2017 ACM International Joint Conference on Pervasive and Ubiquitous Computing*, ser. UbiComp ’17, Maui, Hawaii: ACM, pp. 935–940. DOI: [10.1145/3123024.3124571](https://doi.org/10.1145/3123024.3124571).
- R. Majethia, **V. Mishra**, A. Singhal, L. Manasa K, K. Sahiti, and V. Nandwani. 2016, “PeopleSave: Recommending effective drugs through web crowdsourcing,” in *2016 8th International Conference on Communication Systems and Networks (COMSNETS)*, IEEE, pp. 1–6. DOI: [10.1109/COMSNETS.2016.7440000](https://doi.org/10.1109/COMSNETS.2016.7440000).
- R. Majethia, **V. Mishra**, P. Pathak, D. Lohani, D. Acharya, and S. Sehrawat. 2015, “Contextual sensitivity of the ambient temperature sensor in Smartphones,” in *2015 7th International Conference on Communication Systems and Networks (COMSNETS)*, IEEE, pp. 1–8. DOI: [10.1109/COMSNETS.2015.7098674](https://doi.org/10.1109/COMSNETS.2015.7098674).
- S. Rajan, M. Joshi, **V. Mishra**, I. Dasgupta, A. Joshi, and R. Majethia. 2015, “HuMorse: Smartphone Based Unified Home Automation for the Disabled and Elderly,” in *Adjunct Proceedings of the 2015 ACM International Joint Conference on Pervasive and Ubiquitous Computing*, ser. UbiComp’15 Adjunct, Osaka, Japan: ACM, pp. 5–8. DOI: [10.1145/2800835.2800840](https://doi.org/10.1145/2800835.2800840).

Posters and Tech Reports

- V. Mishra**. Aug. 2018, “Poster: Investigating the Role of Context in Perceived Stress Detection in the Wild,” IBM Intern Poster Session.
- V. Mishra**, B. Lowens, S. Lord, K. Caine, and D. Kotz. Apr. 2018, “Investigating Contextual Cues as Indicators for EMA Delivery,” Dartmouth Computer Science, Tech. Rep. TR2018-842. [Online]. Available: <http://www.cs.dartmouth.edu/~trdata/reports/TR2018-842.pdf>.
- V. Mishra**, R. Wang, and A. Campbell. Apr. 2016, “Poster: Sensing Stress Levels,” Computer Science Research Symposium (CSRS), Dartmouth College.

Teaching Experience

	Guest Lecturer	
Fall ’17	COSC 65: Smartphone Programming <i>Prof. Sergey Bratus</i>	Dartmouth College
	Teaching Assistant	Dartmouth College
Winter ’18	COSC 65: Smartphone Programming	
Fall ’16	COSC 76: Artificial Intelligence	
Summer ’16	COSC 52: Full-Stack Web Development	
Fall ’15	COSC 31: Algorithms	

Technical Skills

Programming Languages	Python/NumPy/SciPy · Java · Objective C · R · Matlab · C/C++ · \LaTeX · SQL · HTML/CSS · PHP · .Net
Software Development & Prototyping	Android, iOS, Linux, MacOS, Chrome

Grants and Awards

- 2018 **NIH/NIDA** via **Dartmouth Center for Technology and Behavioral Health**, \$20,887
Development of an open-source state-of-receptivity MobileCoach module for mHealth field studies, with David Kotz (PI)
- 2017 – 2018 **Student Travel Grant**, Neukom Institute
- 2018 **Student Travel Grant**, Dartmouth Computer Science

Professional Service

- Workshop Organizer**
- 2016 *Mental Health and Well-being: Sensing and Intervention* – Workshop at UbiComp '16
- Reviewer**
- 2018 PACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT)
- 2018 CHI, *Special Recognition for Outstanding Review*
- 2017–2018 Journal of Ambient Intelligence and Humanized Computing

Leadership and Social Awareness

- 2012 – 2013 **President** – SNU Technology and Innovations Club
Shiv Nadar University
- 2010 – Present **Volunteer** at Playtime Delhi
A non-profit organization for Autistic Children in Delhi