

# Enabling Effective Delivery of Digital Health Interventions



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Tuesday, April 2nd, 2024  
12:00 – 13:00 PM  
BMI Classroom 4004  
Woodruff Memorial Research Building

or

Join us on Zoom link:  
<https://zoom.us/j/95283581592>  
Meeting ID: 95283581592



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**Abstract:** The pervasiveness of sensor-rich mobile, wearable, and IoT devices has enabled researchers to passively sense various user traits and characteristics, which in turn have the potential to detect and predict different mental- and behavioral-health outcomes. Upon detecting or anticipating a negative outcome, the same devices can be used to deliver in-the-moment interventions and support to help users. One important factor that determines the effectiveness of digital health interventions is delivering them at the right time: (1) when a person needs support, i.e., at or before the onset of a negative outcome, or a psychological or contextual state that might lead to that outcome (state-of-vulnerability); and (2) when a person is able and willing to receive, process, and use the support provided (state-of-receptivity). In this talk, I will present my research about when to deliver interventions by exploring and detecting both vulnerability and receptivity. I will start by discussing my work that advances the current state-of-the-art by developing reproducible methods to accurately sense and detect various mental and behavioral-health outcomes like stress and opioid use disorder. Next, I will discuss my work regarding methods to explore and detect receptivity to interventions aimed at improving physical activity and how it can guide the design, implementation, and delivery of future mHealth interventions. Finally, I will discuss some of the current projects my lab is working on to build complete solutions that span the entire life-cycle of a digital health intervention (from sensing to intervention delivery) for various mental and behavioral health outcomes by answering "what," "when," and "how" to deliver interventions.

**Bio:** Dr. Varun Mishra is an assistant professor at Northeastern University, holding a joint appointment with the Khoury College of Computer Sciences and the Bouvé College of Health Sciences. Dr. Mishra's research focuses on leveraging ubiquitous technologies like smartphones and wearables to enable effective digital health interventions for mental and behavioral health outcomes. His research is in the broad field of Ubiquitous Computing and lies at the intersection of mobile/wearable sensing, human-centered computing, data science, and behavioral science. Dr. Mishra's work is highly interdisciplinary, and he regularly collaborates with clinicians, psychologists, engineers, and other computer scientists to design, build, and deploy the tools and systems needed for their collective research goals. Dr. Mishra's work is supported by NIH/NIDA and has been published in top-tier venues in both computing and medicine, like UbiComp/IMWUT, ACM HEALTH, MobiCom, Annals of Behavioral Medicine, and JMIR. You can read more about Dr. Mishra at <https://varunmishra.com/>.