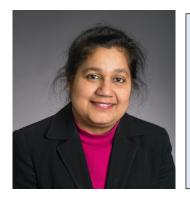# GRADUATE SEMINAR

YouTube Video Analytics for Health Literacy and Chronic Care Management: An Augmented Intelligence Approach to Assess Content and Understandability

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Video sharing social media platforms, such as YouTube, offer an effective way to deliver medical information that may be more understandable for the public, with the potential to improve health literacy, patient-physician interactions, self-care and outcomes. Few studies have identified scalable, replicable and efficient technology-enabled interventions, delivered as evidence-backed digital therapeutics, to improve the ease with which patients and health professionals can retrieve understandable medical information to manage chronic conditions. We propose an augmented intelligence approach that synthesizes annotations from domain experts, deep learning and co-training methods from machine learning, and a systematic approach to extract patient education constructs on understandability and encoded medical information to develop an automated, generalizable video classification solution. We further examine the simultaneous impact of understandability and validated medical information in a video on several dimensions of collective engagement by conducting a multiple-treatment propensity score based matching approach that allows us to implement a quasi-randomization research design. While confirming common assessments of the relationship between user engagement and patient education materials, our analysis quantifies the nuanced effects using actual viewing data in the specific context of understandability of complex medical information encoded in patient education videos found on YouTube, with implications for research and practice.

Rema Padman is Trustees Professor of Management Science and Healthcare Informatics in the Heinz College of Information Systems and Public Policy at Carnegie Mellon University and Adjunct Professor in the Department of Biomedical Informatics at the University of Pittsburgh School of Medicine. Her research investigates healthcare analytics and operations, data-driven decision support and process modeling and risk analysis in the context of clinical and consumer-facing information technology interventions, such as e-health, m-health, chronic and infectious disease management and workflow analysis, in the inpatient, ambulatory and consumer self-health management settings. She is an elected Fellow of the American Medical Informatics Association.

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