A TRANSDISCIPLINARY APPROACH TO TEAMS: IMPROVING
SOCIOTECHNICAL SETTINGS THROUGH TEAM COGNITION
AND HUMAN-CENTERED COLLABORATIVE TECHNOLOGY

presented by

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Abstract:
In this presentation, Dr. McNeese overviews his research program aimed at better understanding and improving teamwork in multiple sociotechnical environments through the advancement of team cognition and human-centered collaborative technologies. The presentation begins by highlighting how Dr. McNeese's transdisciplinary background of human factors, computer-supported cooperative work, information science, and human computer interaction orients the unique perspective he takes in studying teams. Next, an overview of team cognition is presented. Two different theoretical views of team cognition are described, a knowledge based perspective and an interaction based perspective. Then, a new integrative holistic perspective of team cognition is presented that incorporates aspects of both knowledge and interaction. After presenting these theoretical views, three significant research projects that have contributed to the team cognition literature are highlighted. First, pioneering-level research is presented that empirically investigates the development of team cognition during collaborative information seeking, a fundamental step in team decision-making. Second, a study is presented that is the first to empirically evaluate a real human-autonomy team across multiple dimensions of teamwork, showing significant promise for the future of human-machine teaming. Finally, research is outlined that describes the importance of team cognition in healthcare systems, highlighting how it can be applied to cancer care teams and code blue resuscitation teams. The presentation concludes with future research trajectories relating to improving team effectiveness.

Bio:
Nathan J. McNeese is a Postdoctoral Research Associate & Scholar in Human Systems Engineering at Arizona State University working directly with Dr. Nancy Cooke, and a Professional Research Affiliate at the Mayo Clinic. Dr. McNeese earned his PhD in Information Sciences & Technology with a focus on Computer-Supported Cooperative Work and Human Factors under the advisement of Dr. Madhu Reddy from The Pennsylvania State University. Prior to his PhD, he completed a B.S. in Psychology with a minor in Security Risk Analysis from The Pennsylvania State University. For over 10 years, his work in Human Factors has been recognized through multiple publications, external funding, and being an editorial board member of Human Factors: The Journal of Human Factors & Ergonomics. His research is grounded in a human systems engineering approach, in which he seeks to optimize sociotechnical settings by understanding team effectiveness and developing more effective human-centered collaborative technologies. Specific interests include the continued study and conceptual development of team cognition in multiple sociotechnical settings, leveraging teamwork principles for the development of collaborative healthcare technologies, articulating new means of teaming (such as human-machine and machine-machine), and harnessing the power of data science for improving teamwork.

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