

Foreword

This special issue of the Industrial and Systems Engineering Review once again showcases the top papers from the annual General Donald R. Keith memorial capstone conference at the United States Military Academy in West Point, NY. Despite continued COVID restrictions, the truly innovative conference included a mix of in-person presentations with over 50 live and remote judges from across academia and industry to create a high-quality event highlighting the undergraduate student team research. After consideration of over 50 academic papers, the eight listed in this issue were selected for publication in this special issue of the journal. The topics discussed are broad and diverse, however decision support within an uncertain and complex environment emerges as a theme. Much of the work completed by industrial and systems engineers focuses on getting decisions right by means of the tools of our trade. The suite of tools surveyed within these papers represents several state-of-the-art methods as well as time-proven techniques within a unique application domain.

Military applications dominated several of the papers. Downey et al. studied massive datasets that represent military operational behaviors in training, seeking to better understand military operational capabilities. Ungrady and Dabkowski tackled the complexities of US Army recruiting through the application of fuzzy cognitive maps, searching for causation. Middlebrooks et al. studied military acquisition system decisions, applying system dynamics modeling.

Process improvement represented another sub-theme, with continued focus on decision support. Enos et al. applied lean six sigma techniques to manufacturing processes. Katz et al. explored biomedical machine maintenance scheduling, seeking optimal solutions to a complex scheduling task. Kaloudelis et al. developed a pandemic decision support process for universities.

Analytics and machine learning techniques applied to the information domain dominated the third sub-theme. Krueger and Enos developed analytics to support ice hockey strategies. Manzonelli et al. applied natural language processing against information operations, seeking to automate the examination of incredible amounts of narrative data that seek to shape beliefs and attitudes.

Please join me in congratulating our authors, especially the young undergraduate scholars that provided the primary intellectual efforts that created the contents of this issue.

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