BENJAMIN J KWASA
bkwasa@kent.edu
Assistant Professor, Aerospace Engineering
College of Aeronautics & Engineering, Kent State University

Education:

Ph.D.	Aerospace Engineering, Iowa State University, August 2017
M.Eng.	Systems Engineering, Iowa State University, Ames, Iowa, May 2016
B.Sc.	Aerospace Engineering, Iowa State University, 2012

Technical Interests:

Organization Design in the Design of Complex Systems, Operations Research, Value-Driven Design, Multidisciplinary Design Optimization, Heuristic Optimization, Systems Engineering, Model-Based Systems Engineering, Engineering Education, Decision Analysis, Virtual Engineering, Virtual Reality, Augmented Reality, Healthcare Systems

Professional Experience:

Jun' 21-Present Assistant Professor, College of Aeronautics & Engineering, Kent State University
- Decision Analysis incorporated in Multidisciplinary Design Optimization and Value-Driven Design
- Model-Based Systems Engineering for Digital Engineering
- Virtual Reality Development for Complex System Design

Aug' 18-Aug' 21 Assistant Professor, Engineering Management and Systems Engineering Department, Missouri S&T

Aug '17-Aug '18 Post-Doctoral Research Associate, Department of Aerospace Engineering, Iowa State University

Jan '13-Aug '17 Research Assistant, Department of Aerospace Engineering, Iowa State University

Jan '14-Aug '17 Teaching Assistant, Department of Aerospace Engineering, Iowa State University

Publications – Archived Journal – Under Review:

Martin, A.,Jamadgni, D., Pauls, A., Frankiewicz,C., Chan, J., Pokuri, C., Banerjee,S., Ganapathysubramanian,B., **Kwasa,B.**, Thuo, M., "Recycling at Point of Disposal through Energy Landscape Inversion", *submitted to Nature*

Vanfossan, S. **Kwasa, B.**, "Ideal Sort: A Terminable, Efficient Non-dominated Sorting Algorithm", *submitted to IEEE Transactions on Cybernetics*

Publications – Archived Journal – Published:

Vanfossan, S., Dagli,C., **Kwasa, B.** "An Agent-Based Approach to Artificial Stock Market Modeling." Procedia Computer Science 168 (2020): 161-169.

Philpott, R., III; **Kwasa, B.J.**; Bloebaum, C.L. Use of a Value Model to Ethically Govern Various Applications of Small UAS. Drones 2018, 2, 3.

Vidyadharan, A.; Philpott, R., III; **Kwasa, B.J.**; Bloebaum, C.L. Analysis of Autonomous Unmanned Aerial Systems Based on Operational Scenarios Using Value Modelling. Drones 2017, 1, 5.

Kimani, F.W.; Mwangi, S.M.; **Kwasa, B.J.**; Kusow, A.M.; Ngugi, B.K.; Chen, J.; Liu, X.; Cademartiri, R.; Thuo, M.M. Rethinking the Design of Low-Cost Point-of-Care Diagnostic Devices. *Micromachines* 2017, *8*, 317

Publications – Archived Journal – *Accepted*:

Kwasa, B., Kannan, H., Bloebaum, C.L., "Incorporation of Organization Design in the Design of Large-Scale Complex Engineered Systems", *submitted to Journal of Aerospace Operations (JAO). Resubmitted with minor revisions*

Publication - Conference Proceedings (Full Papers):

Fernandes, L., **Kwasa, B.,** "Advanced Air Mobility: A Systems Engineering Characterization of a Complex Operational Environment" Proceedings of the American Society for Engineering Management 2024 International Annual Conference G. Natarajan, H. Zhang, and E.H. Ng eds

Kwasa, B., Fussell, S., "A Systems Engineering Framework For Complex Training Systems: Virtual Reality In Flight Training", Proceedings of the American Society for Engineering Management 2023 International Annual Conference G. Natarajan, H. Zhang, and E.H. Ng eds

Humane, P., Taylor Bosworth, K., **Kwasa, B.J.**, Henslee, A.M. and Cudney, E.A., 2020. A Model-Based Systems Engineering Approach to Representing Substance Use. "Proceedings of the International Annual Conference of the American Society for Engineering Management. American Society for Engineering Management (ASEM), 2020.

Omole, O**., Kwasa, B.J**., Corns, S. and Fahrenholtz, E. A Model-Based Systems Engineering Approach to Trade Space Exploration of Virtual Reality Training Systems. "Proceedings of the International Annual Conference of the American Society for Engineering Management. American Society for Engineering Management (ASEM), 2020.

Vanfossan, S., Dagli, C., **Kwasa, B.** "A system-of-systems meta-architecting approach for seru production system design." In 2020 IEEE 15th International Conference of System of Systems Engineering (SoSE), pp. 29-34. IEEE, 2020.

Vanfossan, Samuel (2019). "A Geometrically-Based Method for Efficient Many Objective Decision-Making," Proceedings of the American Society for Engineering Management 2019 International Annual Conference E. Schott, H. Keathley, and C. Krejci, eds (Best Student Paper)

Vanfossan, S., Dagli, C., **Kwasa, B.** "An Agent-Based Approach to Artificial Stock Market Modeling," Complex Adaptive Systems Conference with Theme: Leveraging AI and Machine Learning for Societal Challenges, CAS 2019

Basha, Nazareen Sikkandar; **Kwasa, Benjamin**; Bloebaum, Christina. "Study of Cost Overrun and Delays of Department of Defense (Dod)'S Space Acquisition Program." Proceedings of the International Annual Conference of the American Society for Engineering Management(ASEM) 2018, 17th - 20th October, Coeur d'Alene Idaho

Kwasa, B., Kannan, H., Mesmer, B., Bloebaum C.L., "Capturing Trust as Organizational Uncertainty in A Value-Based Systems Engineering Framework" 2017 ASEM International Conference, 18th – 21st October, Huntsville, Alabama, USA

Basha, N.S, **Kwasa, B.**, Kannan, H., Bloebaum C.L., "Cynefin Sensemaking Framework for Decision Support in Design and Development of Large Scale Complex Engineered Systems" 2017 ASEM International Conference, 18th – 21st October, Huntsville, Alabama, USA

Kwasa, B., Kannan, H., Bloebaum C.L., "Capturing Organizational Uncertainty in a Value-Based Systems Engineering Framework" 2016 ASEM International Conference, 26th – 29th October, Charlotte, North Carolina, USA

Basha, N.S, **Kwasa, B.**, Kannan, H., Bloebaum C.L., "Sense-Making in a Value-Based Context due to Requirements Creep" 2016 ASEM International Conference, 26th – 29th October, Charlotte, North Carolina, USA

Kwasa, B., Kannan, H., Bloebaum C.L., "Impact of Organization Structure on the Value of a Commercial Communication Satellite", CSER 2016, 22nd – 24th March, Huntsville, AL

Kwasa, B., Kannan, H., Bloebaum C.L., "Impact of Organization Structure in a Value-based Systems Engineering Framework" 2015 ASEM International Conference, 7th – 10th October, Indianapolis, IN

Kwasa, B., Bloebaum, C.L., Kannan, H., Mesmer, B., "Organization Design in the Context of Value-Driven Design" AIAA SciTech 2015, 5th – 9th January, Kissimmee, FL

Grants and Contracts:

Awarded:

Title:	Digital Engineering Design Center for Space Applications (DEDC Space @Kent)
Participation:	Co-PI
Source:	National Center for Defense Manufacturing and Machining
Period:	6/2024 – 8/2025

Title:	DEVELOP: Drones and Airplanes Engagement with VR Experience for Early Career Opportunities
Participation:	Co-PI
Source:	FAA Aircraft Pilots Workforce Development Grant Program 3-FAA-AWD-AP
Period:	3/2024 – 2/2025

Title:	REU Site: Research Experience for Undergraduates in Robotics and Autonomous Systems
Participation:	Senior Personnel
Source:	National Science Foundation
Period:	5/2023 – 4/2026

Title:	Recycling at Point of Disposal via Energy Landscape Engineering
Participation:	PI
Source:	North Carolina State University/DARPA Subaward
Period:	5/2022 – 11/2023

Title:	High Power Rocket Team Design Competition
Participation:	PI
Source:	Ohio Space Grant Consortium
Period:	1/2022 – 12/2022, 1/2023 – 12/2023, 1/2024 – 12/2024

Title:	Research, Design, Build: AIAA Design Build Fly
Participation:	PI
Source:	Ohio Space Grant Consortium
Period:	1/2022 – 12/2022, 1/2023 – 12/2023, 1/2024 – 12/2024

Title:	Transportation Safety in Rural Areas: An Exploration of Virtual Reality and Driving Simulation in Driver Response and Awareness
Participation:	PI
Source:	Mid-America Transportation Center
Period:	2/2021 – 6/2022

Title:	Artificial Intelligence for Tactical Training
Participation:	Co-PI
Source:	Office of Naval Research
Period:	3/2021 – 9/2021

Title:	Effectiveness of Speed Management Methods in Work Zones
Participation:	Co-PI
Source:	Missouri Department of Transportation
Period:	3/2021 – 10/022

Title:	Optimization of Transportation Infrastructure System Performance with Autonomous Maintenance Technology in Work Zones
Participation:	Co-PI
Source:	Mid-America Transportation Center
Period:	2/2021 – 6/2022

Title:	Secure and Attestable Model-Based Engineering
Participation:	Co-PI
Source:	The Boeing Company
Period:	1/2019 –9/2019

Title:	Collaborative Research: Theoretical Impact of Acquisition Mechanisms on System Design Outcomes Under Uncertainty
Participation:	Postdoc
Source:	National Science Foundation

Period: 8/2017 – 8/2018

Title: INFEWS/T2: Cyber-based Decision Support Strategies to Achieve Consensus for FEW System Sustainability using Incentive and Policy Structures
Participation: Postdoc
Source: National Science Foundation
Period: 8/2017 – 8/2018

Teaching:

AER E 421	Advanced Aircraft Structures
AER E 362	Aerospace Systems Integration
AER E 261	Aircraft Performance and Design
ENGR 11000	Introduction to Engineering *Active
ENGR 45799	Aircraft Design I (Capstone) *Active
ENGR 45899	Aircraft Design II (Capstone) *Active
ENGR 57200	Systems Engineering *Active
ENGR 35300	Aerospace Vehicle Performance I *Active
EM 274	Engineering Mechanics – Statics.
ENGR 160	Engineering Problems with Computer Applications Laboratory
EMGT 6412	Mathematical Programming (Graduate Level)
EMGT 5414	Operations Research

Professional Memberships and Activities:

American Institute of Aeronautics and Astronautics (AIAA)
Member, 2009 – Present

American Society for Engineering Management (ASEM)
Member, 2015 – Present
Systems Engineering Track Chair ASEM 2018 - Present IAC
Student Chapter Advisor 2018 – 2021

American Society for Engineering Education (ASEE)
Member, 2019 – Present
Systems Engineering Division Treasurer (2019 – 2021), Program Chair (2021 – 2022)

Institute of Industrial and Systems Engineers (IISE)
Member, 2019 – Present
Student Chapter Advisor 2018 –2021

Kent State University High Power Rocket Team
Advisor 2021 – Present

Reviewed for

American Society for Engineering Management (ASEM) Engineering Management Journal, 2018

American Society of Mechanical Engineering (ASME) Journal of Mechanical Design, 2017. 2021

American Society for Engineering Management (ASEM) International Annual Conference
2015 - Present

National Society of Black Engineers (NSBE)
Member, 2010 – Present

International Students Advisory Board (ISAB)

Chair, 2015 – 2016
Member, 2013 – 2017

Honors and Awards:

Winner of 10K SRAD category at 2022 Spaceport America Cup 2022

American Society for Engineering Management Meritorious Service Award, 2021

American Society for Engineering Management Founder's Award for Best Student Chapter, 2020

American Society for Engineering Management Founder's Award for Best Student Chapter, 2018

Teaching Excellence Award, Fall 2016

Alexander Lippisch Memorial Scholarship for demonstrating professional and creative promise, February 2014