Steven Michael Corns
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ACADEMIC AND PROFESSIONAL POSITIONS:

Associate Chair of Graduate Studies, Engineering Management and Systems Engineering Department, Missouri University of Science and Technology, 2015-present.

Associate Professor, Engineering Management and Systems Engineering Department, Missouri University of Science and Technology, 2014-present.

Assistant Professor, Engineering Management and Systems Engineering Department, Missouri University of Science and Technology, 2008-2014.

Chief Engineer, Hybrid Power Company, LLC, 2007-Present.

EDUCATION:

- PhD. Iowa State University, Ames, IA, Mechanical Engineering, May 2008
- M. S. Iowa State University, Ames, IA, Mechanical Engineering, Minor in Complex Adaptive Systems, December 2003.
- B. S. Iowa State University, Ames, IA, Mechanical Engineering, December 2001.

SUMMARY OF ACTIVITIES

RESEARCH FUNDING
34 awarded grants (16 as PI)
Total Funding: $8,835,522; Shared Credit: $2,296,786; As PI: $2,397,140

PUBLICATIONS
Refereed Journal Articles: 26 accepted/published
Refereed Conference Publications: 76 total
Book Chapters: 4 published

RESEARCH GRANTS:

"Identification of a Response and Rescue Network for the St. Louis Region," $60,000, Missouri Department of Transportation, sub-award with University of Missouri, Columbia, June 2022 - June 2024, Co-PI (45%).

"Artificial Intelligence for Tactical Training, continuation," $85,000, NAVSEA (through Office of Naval Research), January 2022-September 2022, PI (100%).

"Artificial Intelligence Driven Terrain Detection and Automated Decision making in Mobile Robot Systems," $362,150, Leonard Wood Institute, September 2021 - March 2023, PI (100%).

"Deep Learning Models and Tools for Disaster Evacuation and Routing," $189,620, Missouri Department of Transportation, August 2021 - July 2022, PI (60%).

"Artificial Intelligence for Tactical Training," $101,000, NAVSEA (through Office of Naval Research), March 2021-September 2021, PI (100%).

"Transportation Safety Training in Rural Areas: An Exploration of Virtual Reality and Driving Simulation in Driver Response and Awareness," $85,000, Missouri Department of Transportation and Mid-America Transportation Center, January 2021 - June 2022, Co-PI (50%).

"Optimization of Transportation Infrastructure System Performance with Autonomous Maintenance Technology in Work Zones," $85,000, Missouri Department of Transportation and Mid-America Transportation Center, January 2021 - June 2022, Co-PI (15%).

"Deep Learning for Unmonitored Water Level Prediction and Risk Assessment," $200,000, Missouri Department of Transportation and Mid-America Transportation Center, January 2021 -June 2022, PI (60%).

"Predictive Deep Learning for Flash Flood Management," MATC-MoDOT, TR202023, $129,999, January 1, 2020-December 31, 2020, $129,999, PI (60%).

"Secure and Attestable Model-Based Systems Engineering," The Boeing Company, $40,000, October 2019-December 2020, PI (25%).

"Predictive Deep Learning for Flood Evacuation Planning and Routing," Missouri Department of Transportation and MidAmerica Transportation Center, $124,048, January 2019 – January 2020, PI (40%).

"Systems Engineering Training," Honeywell Federal Manufacturing and Technologies, $38,072, July-August 2018, PI (100%).

"Integrating Geospatial Data into Multi-Hazards Supply Chain Network Restoration Strategies," (Continuation) United States Geological Survey, $60,000, July 2017-February 2018, Co-PI (40%).

"Computational Methods for Predicting Fetal Outcomes from Heart Rate Patterns," Ozarks Biomedical Initiative, $10,318, from February 2017 - December 2017, PI (100%, work in cooperation with Phelps County Regional Medical Center).

"Integrating Geospatial Data into Multi-Hazards Supply Chain Network Restoration Strategies," (Continuation) United States Geological Survey, $89,996, March 2016-February 2017, Co-PI (40%).

"Enhanced Big Data Analytics Via Data Fusion Interactions Between Unsupervised, Semi-Supervised, Supervised and Reinforcement Learning," Missouri S&T ISC, $18,318, from August 2015 - May 2016, Co-PI (50%).

"Integrating Geospatial Data into Multi-Hazards Supply Chain Network Restoration Strategies," (Continuation) United States Geological Survey, $89,998, March 2015-February 2016, Co-PI (40%).

"Systems Engineering Training for INCOSE EXAM Preparation," Honeywell Federal Manufacturing and Technologies, $15,571, May-July 2015, PI (100%).

"Integrating Geospatial Data into Multi-Hazards Supply Chain Network Restoration Strategies," United States Geological Survey, $95,863, March 2014-February 2015, Co-PI (40%).

"Education and Training: Interactive/Automated Lean Exercises for Distance Learning," U.S. Department of Veterans Affairs, $98,144, from September 2013 – September 2014, Co-PI (33%).

"Communications: Appointment Optimization," U.S. Department of Veterans Affairs, $62,639, from August 2013 – June 2014, Co-PI (33%).

"Systems Engineering Fundamentals for Advanced Materials Application in Aeronautics," Università degli Studi di Napoli Federico II's, $38,400, from August 2013 – December 2013, Co-PI (22%).

"A Framework for Complexity Management in Virtual Forward Operating Base (VFOB) Camps," Construction Engineering Research Laboratory, U.S. Department of Defense, $247,599, July 2013 - September 2014, PI (80%).

"Integrating Geospatial Data into Multi-Hazards Supply Chain Network Restoration Strategies," United States Geological Survey, $89,978, April 2013-September 2013, Co-PI (30%).

"Complex Adaptive System Analysis for Virtual Forward Operational Base Camps, year 2," Construction Engineering Research Laboratory, U.S. Department of Defense, $358,122, February 2012 - February 2013, PI (38%).

"Knowledge Management – Improving Knowledge Sharing through Social Network Analysis," U.S. Department of Veterans Affairs, $68,676, from September 2011 – August 2012, Co-PI (30%).

"Knowledge Management – Knowledge Management Systems Support," U.S. Department of Veterans Affairs, $59,813, from October 2011 – July 2012, Co-PI (40%).

"Agile Systems Engineering: Experiential and Active Learning," Systems Engineering Research Center, RT-19A, $100,000, from May 2011 – May 2012, Co-PI (15%).

"Fundamentals of Agile Systems Engineering," University of Naples, $96,557, from April 2011 – June 2011, Co-PI (20%).

"Complex Adaptive System Analysis for Virtual Forward Operational Base Camps, year 1," Construction Engineering Research Laboratory, U.S. Department of Defense, $398,932, February 2011 - February 2012, PI (58%).

"Development of Virtual Humans for Cultural Competence Training," Leonard Wood Institute, Sub-contract from Wright State University, $84,934, from December 2010 – December 2011, PI (50%).

"Agile Systems Engineering: Experiential and Active Learning," Systems Engineering Research Center, RT-19, $200,000, from May 2010 – May 2011, Co-PI (20%).

"Investigation of Biological Sequestration Methods," Missouri S&T ERDC, $11,775, from January 2009 - December 2009, PI (100%).

"Advanced Electric Drive Vehicles," United State Department of Energy, DE-FOA-0000028, $5,000,000 from 2009-2012, Co-PI (5%).

Refereed Journal Articles:

Shannon, George J., Rayapati, Naga, Corns, Steven M., and Wunsch, Donald C. (2021) "Comparative Study Using Inverse Ontology Cogency and Alternatives for Concept Recognition in the Annotated National Library of Medicine Database," *Neural Networks*, vol 139, pp 86-104, DOI 10.1016/j.neunet.2021.01.018, July 2021.

Goldschmid, Joshua and Corns, Steven (2021) "A Cluster-Based Framework for Interface Analysis in Large-Scale Aerospace Systems," Systems Engineering Journal, DOI 10.1002/sys.21589, June 2021.

Haynes, David and Corns, Steven (2020) “Improving the Real Time Operation of the Electrical Grid by Improving its Management Via the Energy Market,” Engineering Management Journal, *DOI:* 10.1080/10429247.2020.1753488.

Ojha, Akhilesh, Long, Suzanna, Shoberg, and Corns, Steven (2020) “Bottom-Up Resource and Cost Estimation for Restoration of Supply Chain Interdependent Critical Infrastructure,” Engineering Management Journal, August 2020, DOI 10.1080/10429247.2020.1800387.

Gude, Vinayaka, Corns, Steve, and Long, Suzanna (2020) “Flood Prediction and Uncertainty Estimation using Deep Learning,” *Water*, 12(3):884, DOI 10.3390/w12030884.

Lesinski, Gene and Corns, Steven (2019) “A Pareto Based Multi-Objective Evolutionary Algorithm Approach to Military Installation Rail Infrastructure Investment,” *Industrial and Systems Engineering Review*, 7(2), 2019, DOI 10.37266/ISER.2019v7i2.pp64-75.

Pérez Lespier, L., Long, S., Shoberg, T. and Corns S. (2019). “A Model for the Evaluation of Environmental Impact Indicators for A Sustainable Maritime Transportation System,” Frontiers of Engineering Management, 6: 368, https://doi.org/10.1007/s42524-019-0004-9.

Bhanuchander Poreddy, Steven Corns, Suzanna Long, and Ahmet Soylemezoglu, (2016) “Dynamic Mathematical Model Framework of Complex Utility and Logistics System Interactions using Object-Oriented Approach for Forward Operating Bases,” *Engineering Management Journal*, 28(2).

Varun Ramachandran, Suzanna Long, Tom Shoberg, Steven Corns, and Hector Carlo, (2016) “Post-Disaster Supply Chain Interdependent Critical Infrastructure System Restoration: A Review of Data Necessary and Available for Modeling,” *Data Science Journal* 15, DOI 110.5334/dsj-2016-001.

Varun Ramachandran, Suzanna Long, Tom Shoberg, Steven Corns, and Hector Carlo, (2015) “Identifying Geographical Interdependency in Critical Infrastructure Systems Using Open Source Geospatial Data in Order to Model Restoration Strategies in the Aftermath of a Large-Scale Disaster,” International Journal of Geospatial and Environmental Research 2 (1/4): 1-19.

Varun Ramachandran, Suzanna Long, Tom Shoberg, Steven Corns, and Hector Carlo, (2015) “Framework for Modeling Urban Restoration Resilience Time in the Aftermath of an Extreme Event,” Natural Hazards Review, DOI: 10.1061/(ASCE)NH.

Dustin Nottage, Steven M. Corns, Ahmet Soylemezoglu, and Kurt Kinnevan, (2015) “A SysML Framework for Modeling Contingency Basing,” *Systems Engineering*, DOI: 10.1002/sys.21297.

Elizabeth A. Cudney, Steven M. Corns, and Suzanna K. Long, (2014) “Improving Knowledge Sharing in Healthcare through Social Network Analysis,” International Journal of Collaborative Enterprise, 4(1:2) pp.17-33.

Elizabeth A. Cudney, Steven M. Corns, Akalpit Gadre, (2014) “Virtual Modeling for Simulation Based Lean Education,” International Journal of Lean Enterprise Research, Vol. 1, No. 1, pp. 3-21.

Dinesh Kanigolla, Elizabeth A. Cudney, Steven M. Corns, and V. A. Samaranayake (2013) “Project Based Learning for Quality and Six Sigma Education,” International Journal of Six Sigma and Competitive Advantage, Vol. 8, No. 1, pp. 51-68.

David Haynes and Steven M. Corns (2013) “Timekeeping Issues in Ultra-high Quality Metering Systems,” *IEEE Transactions on Smart Grids*, 5(1), pp. 392-393.

Steven M. Corns, Daniel A. Ashlock, and K. M. Bryden (2013) “Development of Antibiotic Regimens Using Graph Based Evolutionary Algorithms,” *BioSystems*, Vol. 114, No. 3, pp. 178-185.

Dinesh Kanigolla, Elizabeth A. Cudney, and Steven M. Corns (2013) “Enhancing Engineering Education Using Project Based Learning for Lean and Six Sigma,” International Journal of Lean Six Sigma, 5(1), pp. 45-61.

Dinesh Kanigolla, Elizabeth A. Cudney, and Steven M. Corns (2013) “Six Sigma: Importance of Education Contributing to Industry,” The Journal of Quality and Participation, Vol. 36, No. 1, pp. 34-38.

Elizabeth A. Cudney, Steven M. Corns, and Protyusha DasNeogi (2013) “A Comparative Analysis of Methodologies of Daily Metroplex Ozone Concentration Prediction,” International Journal of Quality Engineering and Technology, vol. 3, no. 4, pp. 332-347.

Ivan Guardiola, Cihan Dagli, and Steven M. Corns (2013) “Using University-Funded Research Projects to Teach System Design Processes and Tools,” *IEEE Transactions on Engineering Education*, Vol. 56:4, pp. 377-384.

Naresh K. Sharma, Elizabeth A. Cudney, and Steven M. Corns, (2012) “Integration of Dynamic Multi-Response Systems Using the Product of Normalized Squared-Bias and Variance”, *International Journal of Quality Engineering and Technology*, Vol. 3, No. 2, pp. 108-123.

Akshay Kande and Steven M. Corns (2011) Applying Virtual Engineering to Model-Based Systems Engineering, *Systems Research Forum*, Vol. 5, No. 2, World Scientific Publishing Company.

Douglas S. McCorkle, Daniel A. Ashlock, Steven M. Corns, and K. M. Bryden (2011) “Planned Tournament Selection,” *Optimization and Engineering*, 12(3), pp. 303-331.

H. S. Hurd, C. Enøe, L. Sørensen, H. Wachman, Steven M. Corns, K. M. Bryden, and M. Grenier (2008) “Risk-Based Analysis of the Danish Pork *Salmonella* Program: Past and Future,” *Risk Analysis*. 28:2:341-351.

K. M. Bryden, Daniel A. Ashlock, Steven M. Corns, and Stephen J. Willson (2006) "Graph Based Evolutionary Algorithms", *IEEE Transactions on Evolutionary Computations*, Vol. 10:5, pp. 550-567.

Book Chapters:

Jacob Hale, Suzanna Long, Vinayaka Gude, Steven Corns, " Using Trend Extraction and Machine Learning Methods to Improve Flood Modeling and Control," *Data Visualization*, IntechOpen, Feb 2021.

Akhilesh Ojha, Steven Corns, Tom Shoberg, Ruwen Qin, and Suzanna Long (2018) "Modeling and Simulation of Emergent Behavior in Transportation Infrastructure Restoration" in Emergent Behavior in Complex Systems Engineering: A Modeling and Simulation Approach. Wiley Press.

Steven M. Corns and Tony Mayfield, "Domain 9: Systems Engineering", In A Guide to the Engineering Management Body of Knowledge, 3rd Edition, ed. by Hiral Shah, ISBN # 978-0-9831005-3-9, pages 213-228, 2012 The American Society for Engineering Management.

Steven M. Corns, Daniel A. Ashlock and Kenneth Mark Bryden, "Graph Based Evolutionary Algorithms", In *Advancing Artificial Intelligence through Biological Process Applications*, ed. By Ana B. Porto, Alejandro Pazos and Washington Buño, ISBN # 978-1-59904-996-0, 2008.

Book Reviews:

Steven M. Corns, *Fundamentals of Computational Intelligence: Neural Networks, Fuzzy Systems, and Evolutionary Computation*, by James M. Keller, Derong Liu, and David B. Fogel, in Genetic Programming and Evolvable Machines, DOI: 10.1007/s10710-017-9285-0, February 2017.

Technical Reports:

Ojha, A., Kanwar, B., Long, S.K., Shoberg, T.G., and Corns, S., 2019, Supply chain infrastructure restoration calculator software tool—Developer guide and user manual: U.S. Geological Survey Open-File Report 2019–1061, 17 p., https://doi.org/10.3133/ofr20191061.

Peer Reviewed Conference Proceedings:

Kanwar, B. and Corns, S.M.. (2021) “Deep Learning-based Disaster Management Planning and Risk Analysis of Flash Flood-Prone Regions,” Proceedings of the American Society for Engineering Management 2021 International Annual Conference, Denver, CO, October, 2021.

Parrish, M., Corns, S.M. and Mattil, W., Jr. (2021) “Application of Expert Systems to Naval Mission Planning,” Proceedings of the American Society for Engineering Management 2021 International Annual Conference, Denver, CO, October, 2021.

Fulton, I. and Corns, S. (2021) “Determining Optimal Decision Groups for BlockChain Systems using Steiner Systems,” Proceedings of the American Society for Engineering Management 2021 International Annual Conference, Denver, CO, October, 2021.

Goldschmid, Joshua, Gude, Vinayaka, and Corns, Steven (2021) “SoS Explorer Application with Fuzzy-Genetic Algorithms to Assess an Enterprise Architecture - A Healthcare Case Study,” Complex Adaptive Systems 2021 Conference.

Gude, Vinayaka and Corns, S. (2020) “Fetal Heart Rate Predications and Uncertainty Evaluation,” Proceedings of the 2020 IISE Annual Conference, Online.

Kanwar, B., Corns, S.M., and Long, S. (2020) “Predictive Deep Learning for Flood Management Planning and Restoration of Critical Infrastructure,” Proceedings of the American Society for Engineering Management 2020 International Annual Conference, Online, October, 2020.

Kanwar, B., Corns, S.M., Shoberg, T., and Long, S. (2019) “Predictive Deep Learning for Flood Evacuation Planning and Routing,” Proceedings of the American Society for Engineering Management 2017 International Annual Conference, Philadelphia, PA, October, 2019.

Paden, J. and Corns, S.M. (2019) “Intertwined Neural Networks for Number Recognition,” Proceedings of the American Society for Engineering Management 2017 International Annual Conference, Philadelphia, PA, October, 2019.

Gude, V., Corns, S.M., Shoberg, T., and Long, S. (2019) “Reinforcement Learning Framework for Road Restoration Planning,” Proceedings of the American Society for Engineering Management 2019 International Annual Conference, Philadelphia, PA, October, 2019.

Sampath, Vinayaka Nagendra Harikishan Gude Divya, Corns, Steven M. “Feature extraction and prediction of acidosis from cardiotocography data based on antepartum pH data,” Proceedings of the 2018 IEEE Conference on Bioinformatics and Computational Biology, Saint Louis, MO, June 2018.

Ojha, Akhilesh, Long, Suzanna, Shoberg, Tom, and Corns, Steven M. “A Mathematical Programming Approach to Minimizing Post-Disaster Transportation Indirect Costs,” Proceedings of the 2018 IISE Annual Conference, K. Barker, D. Berry, C. Rainwater, eds., Orlando, FL, May 2018. Abstract only

Ojha, Akhilesh, Long, Suzanna, Shoberg, Tom, and Corns, Steven M. “Improving the Efficiency of Vital Supply Distribution after an Extreme Event,” Proceedings of the AAG, New Orleans, LA, April 2018. Abstract Only

Kanwar, Bhanu, Corns, Steven M., Long, Suzanna, and Shoberg, Tom “Mapping Influential Nodes for Transportation Network Post-Disaster Restoration Planning Using Real-World Data,” Proceedings of the AAG, New Orleans, LA, April 2018. Abstract Only

Ojha, Akhilesh, Long, Suzanna, Shoberg, Tom, and Corns, Steven “A System Dynamics Approach for Estimating Post-disaster Transportation Network Failure Costs,” Proceedings of the American Society for Engineering Management 2017 International Annual Conference E-H. Ng, B. Nepal, and E. Schott eds., Huntsville, AL, October 2017.

Sampath, Vinayaka Nagendra Harikishan Gude Divya, and Corns, Steven M. “Evaluation of Support Vector Machine and Random Forest Classifiers in a Real-time Fetal Monitoring System Based on Cardiotocography Data”, Proceedings of the 2017 IEEE Conference on Computational Intelligence in Bioinformatics and Computational Biology, Manchester, UK, August, 2017.

Ojha, Akhilesh, Long, Suzanna, Shoberg, Tom, and Corns, Steven “Using Inoperability to Estimate Extreme Event Failure Costs,” Proceedings of the Institute of Industrial Engineering Annual Conference., Katie Coperich, Beth Cudney, and Harriet Nembhard, eds., Pittsburgh, PA, May 2017. Abstract only.

Antony, Ebin, Corns, Steven, Long, Suzanna and Shoberg, Tom, “Modeling Physical Interdependence of Critical Infrastructure Systems,” Proceedings of the American Society for Engineering Management 2016 International Annual Conference S. Long, E-H. Ng, C. Downing, & B. Nepal eds., Charlotte, NC, October 2016.

Steven M. Corns, Suzanna Long and Tom Shoberg, (2016) “Infrastructure System Restoration Planning Using Evolutionary Algorithms,” 26th Annual International Symposium of the International Council on Systems Engineering (INCOSE2016), DOI: 10-1002/j.2334-5837.2016.00272.x.

Gene Lesinski, Steven M. Corns, and Cihan H. Dagli (2016) “Application of Neural Network to Predict Graduation Success at the United States Military Academy,” *Procedia Computer Science* 93:375-382. DOI: 10.1016/j.procs.2016.09.348.

Gene Lesinski, Steven M. Corns, and Cihan H. Dagli (2016) “A fuzzy genetic algorithm approach to generate and assess meta-architectures for non-line of site fires battlefield capability,” *Proceedings of the 2016 IEEE Congress on Evolutionary Computation*.

David Haynes and Steven M. Corns (2015) “Algorithm for a Tabu – Ant Colony Optimizer,” *Proceedings of the 2015 IEEE Congress on Evolutionary Computation*.

Bhanuchander R. Poreddy and Steven M. Corns (2014) “Efficient Logistics Model of Utilities for Forward Operating Bases,” 2014 American Society of Engineering Management Conference.

Lori Miller, Bhanuchander R. Poreddy and Steven M. Corns (2014) “Perspectives of Emergency Responders,” 2014 American Society of Engineering Management Conference.

Steven M. Corns, Ajay Thukral, Dustin Nottage, Jack Stein and Vijay Thukral, (2014) “Parametric Analysis Through a Model-based Reference Architecture for Medical Device Development,” 24th Annual International Symposium of the International Council on Systems Engineering INCOSE2014.

George Shannon, Steven M. Corns, and Donald C. Wunsch II (2014) “Discovering Objective Functions for Tagging Medical Text Concepts,” *Proceedings of the 2014 IEEE Conference on Computational Intelligence in Bioinformatics and Computational Biology*.

David Haynes and Steven M. Corns (2013) “EA-EMA Optimization Applied to Killer Sudoku Puzzles,” *Accepted to Complex Adaptive Systems Conference*.

Bhanuchander R. Poreddy and Steven M. Corns (2013) “Efficient Dynamic Logistics Routing Model of Utilities Delivery for Forward Operating Bases,” accepted to 2013 American Society of Engineering Management Conference.

Steven M. Corns and Chad Gibson, (2012) “A Model Based Reference Architecture for Medical Device Development,” 22nd Annual International Symposium of the International Council on Systems Engineering (INCOSE2012) and the 8th Biennial European Systems Engineering Conference 2012 (EuSEC 2012), Vol. 1, pp. 2731-2740, ISBN: 978-1-62276-916-2.

Onur Kavechi, Mariesa L. Crow, and Steven M. Corns (2012) “An Automated Forward Operating Base Electrical Distribution System Simulator,” North American Power Symposium (NAPS), Digital Object Identifier 10.1109/NAPS.2012.6336351.

Benjamin Daniels, Steven M. Corns, and Elizabeth A. Cudney (2012) “A Comparison of Representations for the Prediction of Ground-Level Ozone Concentration,” 2012 World Congress on Computational Intelligence, pp 1-8, On-line proceedings, Digital Object Identifier 10.1109/CEC.2012.6252876.

David Haynes, Steven M. Corns, and Ganesh Venayagamoorthy (2012) “An Exponential Moving Average Algorithm,” 2012 World Congress on Computational Intelligence, pp 1-8, On-line proceedings, Digital Object Identifier 10.1109/CEC.2012.6252962.

Andrew Bodenhamer, Cihan H. Dagli, Steven M. Corns, Ivan G. Guardiola (2012) “Development of an Immersive Training Vest,” *Proceedings of the 2012 IEEE Systems and Information Design Symposium (SIEDS)*, pp. 173-177.

Benjamin Daniels, Steven M. Corns, and Elizabeth A. Cudney (2012) “Introduction of R-LCS and comparative analysis with FSC and Mahalanobis-Taguchi method for Breast Cancer classification,” *Proceedings of the 2012 IEEE Symposium on Computational Intelligence in Bioinformatics and Computational Biology*, pp. 283-289.

Andrew Bodenhamer, Ivan G. Guardiola, Steven M. Corns, and Cihan H. Dagli (2012) “Two-Semester Agile Systems Engineering Design Course: Investigation and

Exploration of “Immersive” Training Technologies,” 2012 American Society of Engineering Education Conference, Online Proceedings, Paper ID AC 2012-5564.

David Haynes and Steven M. Corns (2012) “A proposal to use real time pricing to manage the electrical grid as a step toward distributed control,” *Conference on Systems Engineering Research, Procedia Computer Science*, Volume 8, pp. 370-375.

Dustin S. Nottage and Steven M. Corns (2012) “Application of Model-Based Systems Engineering on a University Satellite Design Team,” *Conference on Systems Engineering Research, Procedia Computer Science*, Volume 8, pp. 207-213.

Bhanuchander R. Poreddy and Steven M. Corns (2011) “Arguing Security of Generic Avionic Mission Control Computer System (MCC) using Assurance Cases,” *Complex Adaptive Systems Conference, Procedia Computer Science*, Volume 6, pp. 499-504.

Akalpit Gadre, Elizabeth A. Cudney, and Steven M. Corns (2011) “Model Development of a Virtual Learning Environment to Enhance Lean Education,” *Complex Adaptive Systems Conference, Procedia Computer Science*, Volume 6, pp. 100-105.

Dustin S. Nottage and Steven M. Corns (2011) “SysML Profiling for Handling Army Base Camp Planning,” *Complex Adaptive Systems Conference, Procedia Computer Science*, Volume 6, pp. 63-68.

Lori A. Miller and Steven M. Corns (2011) “Communicating in Chaos: The Evolution of Emergency Response Architecture and Weaknesses Therein,” 2011 American Society of Engineering Management Conference, p. 230.

Dustin S. Nottage and Steven M. Corns (2011) “Base Camp Planning: A SysML Approach,” 2011 Conference on Systems Engineering Research, Redondo Beach, California.

Elizabeth A. Cudney, Steven M. Corns, Scott Grasman, Jennifer Farris, and Stephen Gent, (2011) “Enhancing Undergraduate Engineering Education of Lean Methods using Simulation Learning Modules within a Virtual Environment,” 2011 American Society of Engineering Education Conference, Vancouver, B.C., Online Proceedings, Paper ID AC 2011-2561.

Steven M. Corns, Cihan H. Dagli, and Ivan G. Guardiola (2011) “SE Capstone: Experimental Learning in Distributed Classroom Environment for Systems Engineering Capstone Projects,” 2011 American Society of Engineering Education Conference, Vancouver, B.C., Online Proceedings.

Steven M. Corns (2011) “On the Effects of Graph Based Evolutionary Algorithms for Training Finite State Classifiers,” *Proceedings of the 2011 Congress on Evolutionary Computation*, pp. 1020-1026.

Elizabeth A. Cudney and Steven M. Corns (2011) “A Comparison of Finite State Classifier and Mahalanobis-Taguchi System for Multivariate Pattern Recognition in Skin Cancer Detection,” 2011 IEEE Symposium on Computational Intelligence in

Bioinformatics and Computational Biology, pp. 1-7, On-line proceedings, Digital Object Identifier 10.1109/CIBCB.2011.5948469.

Daniel A. Ashlock, Joseph Brown, and Steven M. Corns (2010) “K-models Clustering, a Generalization of K-means Clustering,” in *Intelligent Engineering Systems through Artificial Neural Networks*, edited by C. H. Dagli et al., ASME Press , vol. 20, pages 485-492.

Jayakanth Jayachandran and Steven M. Corns (2010) “Improving Travelling Salesman Problem Solution Diversity Using Graph Based Evolutionary Algorithms,” in *Intelligent Engineering Systems through Artificial Neural Networks*, edited by C. H. Dagli et al., ASME Press , vol. 20, pages 235-242.

Akshay Kande and Steven M. Corns (2010) “Susceptibility Measure of Models to Changing Requirements in Systems Engineering,” in *Intelligent Engineering Systems through Artificial Neural Networks*, edited by C. H. Dagli et al., ASME Press , vol. 20, pages 27-32.

Jayakanth Jayachandran and Steven M. Corns (2010) “A Comparative Study of Diversity in Evolutionary Algorithms,” in *Proceedings of the 2010 IEEE World Congress on Computational Intelligence*, On-line proceedings, Digital Object Identifier 10.1109/CEC.2010.5586047.

Akshay Kande and Steven M. Corns (2010) “A Methodology to build an Integrated Development Environment for Engineering Systems,” in Proceedings of 2010 Industrial Engineering Research Conference, Abstract ID 660, 2010.

Salik Yadav and Steven M. Corns (2010) “Improved PCR Design for Mouse DNA by Training Finite State Machines,” 2010 IEEE Symposium on Computational Intelligence in Bioinformatics and Computational Biology, pages 249-254, 2010.

Akshay Kande, Jayakanth Jayachandran, and Steven M. Corns (2010) “Integration of SysML into a Virtual Engineering Environment,” 2010 Conference on Systems Engineering Research.

Steven M. Corns (2009) “Co-Evolving Painting Robots using Graph Based Evolutionary Algorithms,” in *Intelligent Engineering Systems through Artificial Neural Networks*, edited by C. H. Dagli et al., ASME Press , vol. 19, pages 205-211, 2009.

Jayakanth Jayachandran and Steven M. Corns (2009) “The Impact of Representation for Taxonomical Evaluation of Evolutionary Algorithms,” in *Intelligent Engineering Systems through Artificial Neural Networks*, edited by C. H. Dagli et al., ASME Press , vol. 19, pages 213-219, 2009.

Daniel A. Ashlock, K. M. Bryden, and Steven M. Corns (2009) “Taxonomy of a Diverse Collection of String Optimization Problems,” in *Intelligent Engineering Systems through Artificial Neural Networks*, edited by C. H. Dagli et al., ASME Press , vol. 19, pages 181-188.

Steven M. Corns (2009) “A Systems Engineering Analysis of Power Generation Alternatives”, 2009 *American Society of Engineering Management Conference*, October 15, 2009.

Steven M. Corns, R. P. Taylor, Daniel A. Ashlock, and K. M. Bryden (2008) “Extending Graph Based Evolutionary Algorithms with Novel Graphs,” *Intelligent Engineering Systems through Artificial Neural Networks*, edited by C. H. Dagli et al., ASME Press , vol. 18, pages 35-44.

Daniel A. Ashlock, K. M. Bryden, and Steven M. Corns (2008) “Small Population Effects and Hybridization,” in *Proceedings of the 2008 IEEE World Congress on Computational Intelligence*, pages 2642-2648.

Steven M. Corns, Daniel A. Ashlock and K. M. Bryden (2007) “Optimizing Tartarus Controllers using Graph Based Evolutionary Algorithms,” *Intelligent Engineering Systems through Artificial Neural Networks*, edited by C. H. Dagli et al., ASME Press , vol. 17, pages 195-200.

Steven M. Corns, H. S. Hurd, Daniel A. Ashlock and K. M. Bryden (2006) “Evolutionary Optimization of an Antibiotic Feed Regimen Applied to Multiple Bacteria,” in *Intelligent Engineering Systems through Artificial Neural Networks*, edited by C. H. Dagli et al., ASME Press , vol. 16, pages 255-260.

Steven M. Corns, Daniel A. Ashlock and K. M. Bryden (2006) “Takeover Times in Graph Based Evolutionary Algorithms,” in *Intelligent Engineering Systems through Artificial Neural Networks*, edited by C. H. Dagli et al., ASME Press , vol. 16, pages 119-124.

Steven M. Corns, H. Scott Hurd, Lorraine J. Hoffman and K. M. Bryden (2006) “Evolving Antibiotic Regimens to Minimize Bacterial Resistance in Swine,” 11th Annual AIAA/ISSMO Multidisciplinary Analysis and Optimization Conference, Portsmouth, VA, On-line proceedings.

Steven M. Corns, H. S. Hurd, Daniel A. Ashlock and K. M. Bryden (2006) “Developing Antibiotic Regimens Using Evolutionary Algorithms,” Proceedings of the 2006 IEEE Symposium on Computational Intelligence in Bioinformatics and Computational Biology, pages 476-481.

Daniel A. Ashlock, K. Cottenie, L. Carson, K. M. Bryden and Steven M. Corns (2006) “An Evolutionary Algorithm for the Selection of Geographically Informatics Species,” Proceedings of the 2006 IEEE Symposium on Computational Intelligence in Bioinformatics and Computational Biology, pages 279-285.

Steven M. Corns, Daniel A. Ashlock, Douglas S. McCorkle and K. M. Bryden (2006) “Improving Design Diversity Using Graph Based Evolutionary Algorithms,” Proceedings of the 2006 IEEE World Congress on Computational Intelligence, pages 1037-1043.

Daniel A. Ashlock, K. M. Bryden, Steven M. Corns and Justin Schonfeld (2006) “An Updated Taxonomy of Evolutionary Computation Problems Using Graph-Based Evolutionary Algorithms,” in Proceedings of the 2006 IEEE World Congress on Computational Intelligence, pages 403-410.

Steven M. Corns, K. M. Bryden, and Daniel A. Ashlock (2005) “The Impact of Novel Connection Topologies on Graph Based Evolutionary Algorithms”, *Smart Engineering System Design: Neural Networks, Evolutionary Programming, and Artificial Life*, edited by C. H. Dagli et al., ASME Press, 15:201-209.

Steven M. Corns, K. M. Bryden, Daniel A. Ashlock and David Muth (2005) “On the Effects of Representation on Evolving Grid Robot,” In *Proceedings of the 2005 IEEE Congress on Evolutionary Computation*, pages 1135-1140.

Steven M. Corns, K. M. Bryden and Daniel A. Ashlock (2005) “Solution Transfer Rates in Graph Based Evolutionary Algorithms,” In *Proceedings of the 2005 Congress on Evolutionary Computation*, pages 1699-1705.

Daniel A. Ashlock, K. M. Bryden, and Steven M. Corns (2005) “Graph Based Evolutionary Algorithms Enhance the Location of Steiner Systems,” In *Proceedings of the 2005 Congress on Evolutionary Computation*, pages 1861-1866.

Daniel A. Ashlock, K. M. Bryden, Steven M. Corns, and Stephen J. Willson, *A Taxonomy of Evolutionary Computation Problems*, in Intelligent Engineering Systems Through Artificial Neural Networks, Vol 14:235-240, 2004.

Daniel A. Ashlock, S. J. Emrich, K. M. Bryden, Steven M. Corns, T.J. Wen, and P. S. Schnable, *A Comparison of Evolved Finite State Classifiers and Interpolated Markov Models for Improving PCR Primer Design*, in the Proceedings of the 2004 IEEE Symposium on Computational Intelligence in Bioinformatics and Computational Biology (CIBCB '04): 190-197, 2004.

Daniel A. Ashlock, K. M. Bryden, Steven M. Corns, P. S. Schnable and T.J. Wen, *Training Finite State Classifiers to Improve PCR Primer Design*, 10th Annual AIAA/ISSMO Multidisciplinary Analysis and Optimization Conference, Albany, NY, 2004.

Daniel A. Ashlock, K. M. Bryden and Steven M. Corns, *On the Taxonomy of Evolutionary Computation Problems*, in Proceedings of the 2004 Congress on Evolutionary Computation, Vol 2:1713-1719, 2004.

Steven M. Corns, K. M. Bryden, Daniel A. Ashlock, *Rate of Information Transfer in Graph Based Evolutionary Algorithms*, Proceedings of ANNIE:261-266, 2003.

Steven M. Corns, K. M. Bryden, Daniel A. Ashlock, *Evolutionary Optimization Using Graph Based Evolutionary Algorithms*, proceedings of 2003 IMECE, pp. 315-320, 2003.

Presentations, Tutorials, Panels, and Invited Talks:

“Flood Evacuation Planning and Routing using Deep Learning Neural Networks,” University of Missouri System Research Summit, June 2019.

Sampath, Vinayaka Nagendra Harikishan Gude Divya, and Corns, Steven M. “Feature Extraction and Prediction of Acidosis from Cardiotocography Data Based on Antepartum pH Data”, presented at 2018 IEEE Conference on Computational Intelligence in Bioinformatics and Computational Biology, Saint Louis, MO, May 2018.

“Introduction to Model-Based Systems Engineering,” Half-day tutorial, INCOSE Great Lakes Regional Conference, West Lafayette, Indiana, October, 2013.

“Integration and Optimization of Multiple Supply Chain Networks in Extreme Event Reconstruction Strategies,” Varun Ramachandran, Suzanna Long, Tom Shoberg, Hector Carlo, Steven Corns, Industrial and Systems Engineering Research Conference, 2013.

“Model-Based Systems Engineering for Contingency Basing,” Invited presentation, Auburn University, November 2012.

“How can we grow the INCOSE University Student divisions program?” Invited Panelist INCOSE International Symposium, Rome, Italy, July 2012.

“State of Model-Based Systems Engineering” Invited presentation, INCOSE International Symposium, Rome, Italy, July 2012.

“Model-Based Systems Engineering Initiative Report” Invited presentation, INCOSE International Symposium, Rome, Italy, July 2012.

“Holistic Modeling of Biotech Systems: A Systems Engineering Approach” Invited Talk for Computer Science Department, Brock University, St. Catherines, Ontario, February 2012.

“Visualization of Model-Based Systems Engineering Architecture Elements” Invited Talk for Model Based Systems Engineering Workshop, INCOSE International Workshop, Jacksonville, FL. January 2012.

“Model-Based Systems Engineering Reference Architecture for Biomedical Devices” Invited Talk for Model Based Systems Engineering Workshop, INCOSE International Workshop, Jacksonville, FL. January 2012.

“Holistic Modeling of the Design Cycle: A Systems Engineering Approach,” Invited Talk for Engineering Department, Valparaiso University, Valparaiso, Indiana, November 2, 2011.

“Increasing Supply Chain Resiliency Using Graph Based Evolutionary Algorithms,” Presentation at 2010 Industrial Engineering Research Conference, Cancun, Mexico, 2010.

“Using VRJuggler and VE-Suite as Virtual Engineering Tools,” Short course at Missouri University of Science and Technology, August, 2009 and April, 2012.

“The Integration of Systems Modeling into a Virtual Engineering Environment,” Presentation at VE_Suite Annual Meeting, Ames, IA, 28 October, 2008.

"Classroom Management," University Teaching Seminar, Iowa State University, August 15, 2007.

Graduate Student Panelist, Preparing Future Faculty (Fall 2006, Fall 2007)

ACADEMICS:

Teaching Interests:

I am interested in developing active learning centered classes and activities, with a focus on complex systems, and model based systems engineering curriculum. I would also like to pursue undergraduate research as a teaching tool.

Classes Taught at Iowa State University:

- Sophomore Thermodynamics I (Spring 2006)
- Junior Thermodynamics II (Summer 2007)
- Elements and Performance of Power Plants (Spring 2007, Spring 2008)
- Introduction to Power Plant Design (Fall 2006, Fall 2007)
- Mechanical Engineering Independent Study (Fall 2006)

Classes Taught at Missouri S&T:

- Systems Engineering and Analysis I (Fall 2008 - Fall 2015)
- Distributed Systems Modeling (Fall Semester only, 2009 - 2012)
- Model Based Systems Engineering (Spring Semester only 2010 - 2013)
- Introduction to Systems Engineering (Fall 2013 – Fall 2021)
- Computational Intelligence (Fall Semester only, 2016 - 2021)
- Advanced Computational Intelligence (Spring 2017)
- Optimization Under Uncertainty (Spring 2021)

PROFESSIONAL SOCIETIES:

- Fellow of the American Society for Engineering Management
- Senior Member Institute of Electrical and Electronic Engineers
- Member IEEE Computational Intelligence Society
- Member International Council on Systems Engineering
- Member National Defense Industry Association
- Member Institute of Industrial and Systems Engineers

SERVICE:

Professional Service:

- Board of Advisors, Systems Engineering Department, United States Military Academy, West Point, 2017-present.
- Member of INCOSE Model-Based Systems Engineering Leadership Team, 2011-2019.

- INCOSE Biomedical Working Group MBSE Challenge Team Lead, 2011-2014.
- IEEE Computational Intelligence Society Bioengineering and Bioinformatics Technical Committee Software and Data Set Task Force Lead, 2010-2013.
- IEEE Computational Intelligence Society Bioengineering and Bioinformatics Technical Committee, 2008-present.
- IEEE CIS Conference Committee Future Conference sub-committee, 2022-present.
- IEEE CIS Conference Committee Competition sub-committee, 2022-present.
- IEEE CIS Conference Committee Conference Budget sub-committee, 2022-present
- Chapter President, IEEE Computational Intelligence Society, 2012-present.
- Vice Chair, IEEE Computational Intelligence Society Bioengineering and Bioinformatics Technical Committee, 2013-2014.
- Vice Chair, IEEE Computational Intelligence Society, Evolutionary Computation Technical Committee Task Force on Education, 2013-2014.
- IEEE Computational Intelligence Society, Evolutionary Computation Technical Committee Task Force on Social Media, 2016-2017.
- Chair, IEEE Computational Intelligence Society Bioengineering and Bioinformatics Technical Committee, 2015-2017.

Conferences and Journals:

- Associate Editor, Engineering Management Journal, 2020
- Finance Chair, 2021 IEEE Conference on Computational Intelligence in Bioinformatics and Computational Biology, 2020-2021.
- Registration Chair, 2021 IEEE Symposium Series on Computational Intelligence, 2020-2021.
- Finance Chair, 2018 IEEE Conference on Computational Intelligence in Bioinformatics and Computational Biology, 2016-2018.
- Program Chair, 2017 IEEE Conference on Computational Intelligence in Bioinformatics and Computational Biology, 2016-2017.
- Program Chair, 2015 IEEE Conference on Computational Intelligence in Bioinformatics and Computational Biology, 2014-2015.
- Track Chair (with Javier Calvo-Amodio), Systems Engineering Track, 2013 ASEM National Conference
- Model-Based Systems Engineering Topic Chair, 2013 INCOSE International Symposium, 2012-2014.
- Technical Review Committee, 2013 INCOSE International Symposium, 2012-2013.
- General Chair, 2014 IEEE Conference on Computational Intelligence in Bioinformatics and Computational Biology, 2012-2014.
- Model-Based Systems Engineering Topic Chair, 2012 INCOSE International Symposium, 2011-2012.
- Technical Review Committee, 2012 INCOSE International Symposium, 2011-2012.
- Finance Chair, 2012 IEEE Symposium on Computational Intelligence in Bioinformatics and Computational Biology, 2010-2012.
- Program Chair, 2011 IEEE Symposium on Computational Intelligence in Bioinformatics and Computational Biology, 2009-2011.
- Program Committee IEEE Symposium on Computational Intelligence in Bioinformatics and Computational Biology, 2008-2013.

- Program Committee, Complex Adaptive Systems Conference, 2011-Present.
- Program Committee Artificial Neural Networks in Engineering Conference, 2008-2010.

Campus:

- Intercampus Faculty Cabinet (UM System), 2018-2021.
- Faculty Senate Past-President, 2020-2021.
- Faculty Senate President, 2019-2020.
- Faculty Senate President-Elect, 2018-2019.
- Faculty Senate Secretary, 2017-2018.
- Faculty Senate and General Faculty Parliamentarian, 2016-2017.
- President of Graduate Faculty, 2015-2016.
- Associate Chair of Graduate Studies, Engineering Management and Systems Engineering Department, advising all non-thesis Engineering Management MS students and entering PhD students, 2015-present.
- Systems Engineering Distance Graduate Students Advisor for students with last name from R-Z, 2009-2013.
- Faculty Advisor to student division of International Council on Systems Engineering, 2009-2017.
- INCOSE Student Competition Advisor, 2012 & 2013, INCOSE International Symposium.
- Faculty Senate, 2011-2013, 2014-present.
- Missouri S&T Facilities Planning Committee, 2011-2017.
- Missouri S&T Public Occasions Committee, 2016-present.

Awards:

- Certified Professional in Engineering Management, 2022
- Edward Smith Faculty Award, Missouri S&T, 2021.
- Outstanding Professor Award – Graduate Students, EMSE, Missouri S&T, 2019.
- Outstanding Professor Award – Graduate Students, EMSE, Missouri S&T, 2017.
- Bernard Sarchet Award, Epsilon Mu Eta honor society, Missouri S&T, 2017.
- Outstanding Professor Award – Graduate Students, EMSE, Missouri S&T, 2016.
- Edward Smith Faculty Award, Missouri S&T, 2013.
- Edward Smith Faculty Award, Missouri S&T, 2012.
- Outstanding Teaching Award of Excellence, Global Learning, Missouri S&T, April 2011.
- Outstanding Teaching Commendation Award, Global Learning, Missouri S&T, April 2009.
- Best Paper Award, Artificial Neural Networks in Engineering Conference, 2008.
- Teaching Excellence Award from Iowa State University, 2007.