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Front Matter

Jorge L. Díaz-Herrera Ph.D.
President, Keuka College, jdiazh@keuka.edu

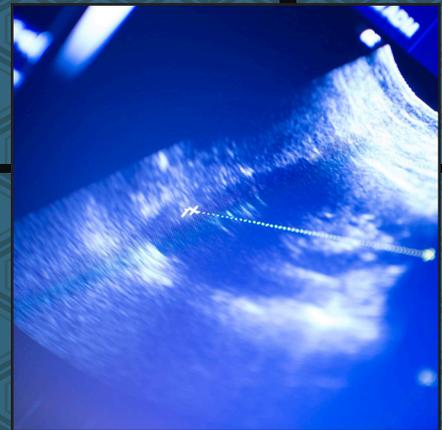
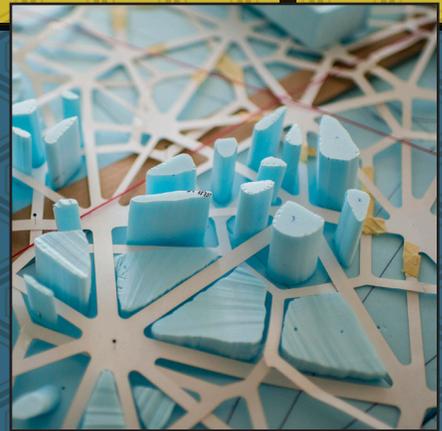
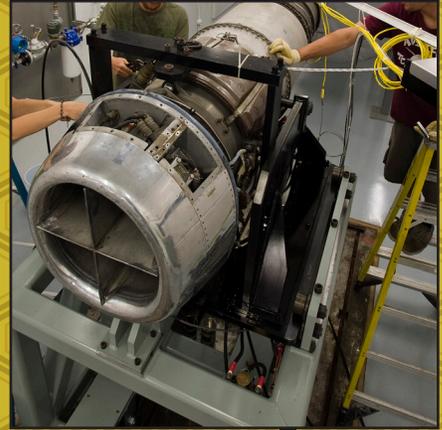
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Southern Illinois University Carbondale
College of Applied Sciences and Arts
1365 Douglas Drive, Mail Code 6604 | Carbondale IL 62901

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The Journal of Applied Sciences and Arts (JASA) supports a liberal arts-based professional education through experiential learning to empower graduates to be exemplary citizens and leaders in today and tomorrow's global, digital wider world.

The Journal of Applied Sciences and Arts (JASA) seeks scholarly contributions to inform the practical application of the Sciences and Arts in solving complex societal problems in the areas listed above and more. We make the distinction between basic research and applied research by following the use-driven research paradigm advanced by Donald Stokes in "Pasteur's Quadrant: Basic Science and Technological Innovation:" a model of research done carefully, i.e., good science, but motivated by specific practical needs, hence referred to as need-driven or use-driven.

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2017 APPLIED SCIENCES AND ARTS MULTIDISCIPLINARY RESEARCH SYMPOSIUM TOP PAPERS

Performance Results of Using Waste

Vegetable Oil Based Biodiesel Fuel in a Turboshift Gas Turboshift Engine

Donald Bartlett and Blaine M. Heisner

FDM Machine Learning: An investigation into the utility of neural networks as a predictive analytic tool for go around decision making

John Bro

Comparison of New Metrics for Assessment of Risks of Occupational Noise

Wisam Al-Dayyeni

2Fly with RPi - Evaluating Suitability of the Raspberry Pi3 B Single Board Computer for Experimental Glass Cockpit Embedded Applications

Donald R. Morris

GENERAL SUBJECTS

The Inability to Bridge the Gap in Oral Health and Health Care through the Affordable Care Act (ACA)

Jennifer S. Sherry and Samantha N. Hennig

Perspectives and Researcher Experiences of Undergraduate Research

Steven C. Goetz, Matthew J. Romero, and Michael F. Robertson

The **Journal of Applied Sciences and Arts (JASA)** publishes research and creative outcomes on use-inspired research as advanced by Donald Stokes in Pasteur's Quadrant. In this research model, Basic Science and Applied Technological Innovation are looked concomitantly as one unit. We publish articles where authors do good science while motivated by specific practical needs, featuring experiences in sciences and arts as applied to solving important complex practical societal problems. Accepted submissions demonstrate evidenced-based practice and practice-based evidence.

This third issue of the journal brings to you four articles selected as best papers presented at the ASA Multidisciplinary Research Symposium, following the tradition established last year, that took place in November 2017 at Southern Illinois University, plus two independent submissions. We present them in this order.

The focus of the symposium is on innovation and emerging technologies that have served or will serve as a catalyst for progress, change, and evolution in the Applied Arts and Sciences. The first article of the issue, ***“Performance Results of Using Waste Vegetable Oil Based Biodiesel Fuel in a Turboshaft Gas Turboshaft Engine,”*** by Donald Bartlett and Blaine M. Heisner, presents results of testing the performance of biodiesel fuels in aviation gas turbine engines. This is an important topic to further the expanded use of these fuels in the industry. Their conclusions are to recommend further testing with lower viscosity fuel before recommending waste vegetable oil-based biodiesel fuel in aviation gas turbine engines.

John Bro's paper titled ***“FDM Machine Learning: An investigation into the utility of neural networks as a predictive analytic tool for go around decision making”*** investigates the utility of neural networks in modeling go-around decisions using historic aircraft flight data. Data collected from nearly 2,000 hours of training flights is used to create a snapshot of an aircraft's flight parameters at 200 feet above ground level on approach. Loss-of-control events during the approach-to-landing phase of flight account for a large share of fatalities in general aviation, and many landing incidents and accidents could be prevented with improved go-around decisions, hence the relevance of this work.

The third article, ***“Comparison of New Metrics for Assessment of Risks of Occupational Noise,”*** authored by Wisam Al-Dayyeni, describes the development of two advanced models—an adaptive weighting (F-weighting) and a complex velocity level (CVL) auditory fatigue model—to evaluate the risks of occupational noise, by comparing performances of five noise assessment metrics. Results suggest that the CVL model is more accurate than the F-weighting model on assessment of occupational noise.

Donald R. Morris, the fourth article from the symposium, seeks to evaluate the suitability of a single-board, inexpensive embedded computer for use in an experimental glass cockpit solution on his paper ***“2Fly with RPi - Evaluating Suitability of the Raspberry Pi3 B Single Board Computer for Experimental Glass Cockpit Embedded Applications.”*** The Raspberry Pi 3B computer was evaluated for potential suitability to drive such a solution based on mathematical analysis and on the experiences of the world's hacking community. It is the author's hope that this solution can become a fully functional open source experimental aircraft situational awareness aid.

The last two articles in the volume were independently submitted and reviewed through the normal process. The first, ***“The Inability to Bridge the Gap in Oral Health and Health Care through the Affordable Care Act (ACA),”*** co-authored by Jennifer S. Sherry and Samantha N. Hennig, highlights health equity. Although it has been scientifically proven that systemic conditions can manifest in the oral cavity, federally funded programs provide limited preventive oral care (Medicare and Medicaid) or not at all (The Affordable Care Act). Typically, most patients who have private insurance can afford to pay out of pocket for premiums and co-payments to dental practitioners. Those who cannot afford care do not receive it.

Steven C. Goetz, Matthew J. Romero, and Michael F. Robertson co-authored the last article in the volume: ***“Perspectives and Researcher Experiences of Undergraduate Research.”*** They point out that ***extracurricular undergraduate research seems to improve student success in academic programs.*** Their study focused on aviation settings addressing the gap in the body of research by investigating the experiences of aviation students who have participated in extracurricular research qualitatively examining the perceptions and experiences of the students.

I hope you enjoy reading these pieces as much as I did and that you can gain some practical advice useful for your own use-driven research. We also invite you to consider submitting your work to our journal.

Cordially yours,



Prof. Jorge L. Díaz-Herrera, Ph.D.
Editor-in-Chief