

FLASHTALK:2

Second Annual Research Flash Talks
College of Applied Sciences and Arts
Southern Illinois University

Wednesday, March 21, 2018

5:30–8 PM

Varsity Theater

418 S. Illinois Ave, Carbondale

Abstracts

Andy Wang • Dean • College of Applied Sciences and Arts

Karen Jo Johnson • Research Committee Co-Chair

Marcea Walter • Research Committee Co-Chair

Presentation Abstracts

Proceedings Editors: David L. Finnigan, Karen Jo Johnson

© 2018 Southern Illinois University College of Applied Sciences and Arts

All rights are reserved by the individual authors who are solely responsible for the content of their work.

STRONG SURVIVORS: CANCER-REHABILITATION RESEARCH AND SERVICE

Dr. Phil Anton

Associate Professor, Dept. of Kinesiology

The SIUC Department of Kinesiology/SIH Strong Survivors Program uses exercise as a therapeutic tool to help cancer survivors and caregivers get through the treatment and recovery period. Strong Survivors is a research-oriented program that collects data pertaining to cancer rehabilitation and survivorship, particularly related to the performance of activities of daily living. This data helps the program add additional evidence for the efficacy of exercise programs in this often underserved population. The program also provides an opportunity for SIUC students to obtain practical, hands-on exercise testing/training experience while building their resumes. As they work with program participants, students apply knowledge that they have learned in the classroom and this leads to important professional and personal growth which can benefit them greatly as they move into the work force or graduate/professional school. Most importantly, Strong Survivors offers cancer survivors and caregivers the opportunity to improve their quality of life through improved fitness/wellness and the management of cancer and cancer treatment-related physical and psychological symptoms/side effects. These symptoms/side effects often reach debilitating levels and this free program helps attenuate or eliminate this impact.

THE CURRENT STATE OF THE AVIATION INDUSTRY

Mr. Michael Burgener

Associate Professor

I will present on the current state of the aviation industry and how it relates to shortages of qualified pilots and aviation mechanics, demographic trends, and how the industry is responding to these historic shortages.

RECENT MENTORED STUDENT RESEARCH IN COMMUNICATION DISORDERS AND SCIENCES

Valerie E. Boyer, PhD, CCC-SLP

Program Coordinator and Associate Professor, Communication Disorders and Sciences

How much therapy is necessary for functional speech improvement following a neurological injury? How does student externship impact vocal performance? How can we facilitate mutual knowledge and understanding of autism spectrum disorders among students studying law and communication disorders and sciences? How do related professionals identify and address auditory processing challenges? These are all questions that students in the communication disorders and sciences (CDS) program are asking and answering through faculty-mentorship. Faculty and student partnerships take a variety of forms in the CDS program including supervision of student thesis work, undergraduate research programs such as McNair Scholars program, and through independent study opportunities. This flash talk will highlight a few of our recent projects in the hope of stimulating inter-disciplinary collaboration.

FREE PEER-REVIEWED AUTOMOTIVE TEXTBOOK

Sean Boyle

Associate Professor, Automotive Technology

One long-term project I'm working on in the Automotive Technology department is a free peer-reviewed automotive textbook. The website automotivetextbook.com plans to offer current, relevant, and highly technical material for any school or self-learner to use in place of expensive textbooks. Much of the material is being created by students in the Automotive Technology program using our vast fleet of vehicles and service equipment. Students will also benefit by receiving authorship on their individual chapters, which allows their projects to "live on" and be used to help other students learn automotive technology.

VIRTUAL REALITY IN THE SCHOOL OF ARCHITECTURE

Michael D. Brazley, Ph.D., AIA, NCARB, NOMA
Associate Professor, Architecture

The next generation of learning technology is Virtual Reality (VR). The research question being asked is: How can VR assist students in learning? This research proves that virtual reality technology does enhance 3D spatial visualization skills of students. Due to the nature of their learning styles, many students need to interact with 3D scenes to enhance their spatial visualization skills, to see and understand the 3D model. This research has also proved that virtual reality technology assist in giving both online and face-to-face architectural students a better education and helps them to improve their spatial visualization skills. The next step, a VR lab!

SMART AND SECURE COMPUTING

Sam Chung, Ph.D.
Director, School of Information Systems and Technologies

Jun Kim, Ph.D.
Assistant Professor, School of Information Systems and Technologies

This presentation has two purposes. The first purpose is how to increase our research performance even with very limited manpower and resource. We introduce student-oriented research with the KSA (Knowledge, Skills, and Abilities) approach and a research group called Smart and Secure Computing Research Group (SSCRG) in order to make the participating students feel secure for preparing for their industry internship or future professional careers. We focus on two emerging technologies – full stack technology and blockchain. The full stack technology needs students to understand different facets of developing and deploying client-server web applications and mobile apps. The students have to understand and practice how diverse languages, tools, engines, frameworks, libraries, architectures, development/operation methodologies, and computing paradigms are integrated for a full-stack project. The blockchain technology requires the students need to understand different facets of developing peer-to-peer web applications and mobile apps called DApp (Distributed App). The students have to understand cryptocurrency, open ledger, and contract, etc. The second purpose is to introduce the current research projects of the SSCRG. We introduce DevSecOps (= Development + Security + Operation), App & DApp,

STREAM (= Science + Technology + Recreation + Engineering + Arts + Mathematics), and Smart & Secure Identity Management (IdM) in order to make the participating students feel smart for preparing for their own future professional businesses. In the DevSecOps research, we attempt to discover evidence-based practices of development, quality assurance including security, and operations. In the App and DApp, we compare an app running on a centralized client/server network and a distributed app running on a decentralized peer-to-peer network in terms of multiple software architectural views. Based upon the architectural comparisons, we propose evidence-based practices of developing App and DApp. In the STREAM project, we study how Recreation and Arts can help STEM education to let K-12 students learn computational thinking and/or programming. In the Smart & Secure IdM, we explore how we can make an IdM system secure and smart with design patterns, compensating controls, cloud computing, and Blockchain technology. Also, research participants of each project are introduced with each project. His research group will have showcases in parallel with this presentation.

CAN MEDICAL MARIJUANA BE A SOLUTION TO THE OPIOID CRISIS?

Jessica Cataldo

Clinical Instructor, Health Care Management

Sandy Collins

Professor, Health Care Management

Scott Collins

Professor, Radiation Therapy/Dosimetry

Richard McKinnies

Associate Professor, Radiation Therapy/Dosimetry

Jane Nichols

Assistant Professor, Rehabilitation Institute

Thomas Shaw

Associate Professor, Health Care Management

Opioid addiction and related deaths have reached a critical level across the United States. Often used as pain relief for multiple medical issues, opi-

oids are continually prescribed and solutions to the reduction of such need further exploration. As a possible reduction of opioid prescriptions, which often lead to abuse, our study seeks to determine if Medical Marijuana can be a potential means by which to reduce opioid prescriptions and use. A comparative study of select states will be conducted to determine if there are differences among groups based on medical vs recreational legislation.

Our research will initially focus on:

1. Perceptions of physicians and health care administrators pertaining to MM as a substitute for Opioids,
2. Where, or if, weaknesses in provider education may, or may not, exist,
3. Barriers that prevent providers of care from using MM as a potential substitute for opioids,
4. Determining how we can enhance SIU's impact on the community's health and wellness.

KID ARCHITECTURE

Jon Davey, Ph.D.

Professor, Architecture and Interior Design

The kid architecture program was developed thirty years ago to introduce young people to the design of the built environment. The one-week camps structured for three different learning levels, grades 4th–6th, middle school and high school have been conducted in various locations internationally to include the Smithsonian, The National Building Museum Washington D.C., Canada and China. The camps have received national and regional awards for the broad breath of hands-on activities and implementation of technology.

The ten objectives for kid architecture endeavor to develop an understanding of the following:

- Why buildings look the way they do
- Why building stand up
- What architects and designers do?
- Design drawing as a problem solving tool/method
- The use of the design process as employed by architects
- How a building is designed, constructed, used and reused
- Construction materials used in buildings
- How and why people “define” space

- The use of computer graphics, animation and Computer-aided design
- Participation in the design of the built environment

The philosophic foundations that kid architecture is built upon is the assumption that those who are exposed early to architectural design will have a different conceptual base from which to formulate more complex and differential ideas about the built environment. Architecture Camps' personnel believe this cognitive skill is as basic to a young person in the modern world as knowing left from right or discriminating the letters "b" from "d." Future advances in the conceptualization of buildings, cities, and personal living spaces will be made by people who are deeply aware of the built environment.

SHAME

Kristiana Feeser

Doctoral Student, Applied Psychology

The goal of this research was three-fold: to understand the effect of shame-inducing feedback on a novel motor behavior skill, to understand the effect of shame-inducing feedback on psychological perception of experience, and to use shame- and guilt-proneness to predict other psychological variables. Participants engaged in a novel motor behavior task in which they used a stylus to trace a moving light (rotary pursuit). Depending on experimental condition, their feedback was either shame inducing or neutral. Following 20 rounds, participants were given a survey. Factors evaluated in the survey included: performance on a rotary pursuit task, motivation, shame-proneness, guilt-proneness, fixing behaviors, use of optional practice, legitimacy of authority, and believability of feedback.

WHAT IS THE BEST METHOD OF PRESERVATION FOR LONG TERM STORAGE AND USAGE OF ANATOMICAL CADAVERS?

Anthony Fleege

Associate Professor, Mortuary Science

Looking at the 3 most popular methods of cadaver preparation, which is the best method as it relates to ease, cost, and long term usage in a medical school environment. After investigating all modern methods, which is the

preferred method that can be implemented at SIU and promoted at other facilities as well?

CHARACTERISTICS OF “GOOD” FLIGHT INSTRUCTORS: HOW ARE FLIGHT INSTRUCTORS DIFFERENT THAN OTHER EDUCATORS

Steven C. Goetz

Assistant Professor, Aviation Management and Flight

Matthew J. Romero

Assistant Professor, Aviation Management and Flight

Michael F. Robertson

Associate Professor, Aviation Management and Flight

A good educator can motivate students to succeed when others cannot. They bring intangible qualities to the teaching profession that promote greater achievement in their students. While there has been some research (Reed, 1989; Sutkin et al, 2008) regarding what some of those aspects are that make a “good” teacher, there is very little research related to what qualities makes a “good” flight instructor. It may be that the same qualities that make a good teacher are necessary for a good flight instructor, but flight instruction is more physically demanding and more stressful than classroom teaching and so there may be very important differences. This research will be a qualitative survey of local flight instructors and students to determine what characteristics are necessary for a good flight instructor at a university. Respondents will also be asked to name individual instructors that they feel are “good.” The aggregate training records of those instructors will be compared to those of the flight training program overall to see if there are quantifiable differences in training outcomes. While this will be a snapshot and not generalizable, it will serve as a pilot test for a national survey on flight instructor characteristics and provide some quantitative backing to the larger survey.

ENVIRONMENTAL PLAIN ALONG THE MISSISSIPPI RIVER IN THE NORTHERN OZARKS REGION

Rolando Gonzalez-Torres, PhD

Associate Professor, Architecture and Interior Design

Starting in the East St Louis area and moving southwards, the Illinois side of Mississippi River is formed by a low-meadow strip of around three miles wide up to the point where the Kaskaskia River reaches the Mississippi, in front of St Genevieve Missouri for about 55 miles of length. Then the low plain is on the West side of the Mississippi for about 20 miles before it returns to be on its east side again up to a point in front of Cape Girardeau Missouri. That first 55-mile strip zone is known as Mississippi Bluffs at Northern Ozarks due to the dramatic topographical difference between the plain and the upper lands, and offers wonderful views from the top to the basin. Besides the fact that these low plains are known by their repeated flooding disasters through the years—to the point that some towns had to be moved uphill over the cliff as the case of Valmeyer—their ecological characteristics are magnificent due their soil richness, what has been exploited by not few farmers on the region. But much more than that could be done since recent urban development trends on first-class cities all around the nation and in Europe are searching for open lands and pocket meadows for town parks, urban farming, recreational purposes, etc. in a pursuit for a blended fabric as a matter of mixed natural/man-made weaving to enrich their city life with opportunities that not long ago were available only by going out to rural areas. Such surface of over 100K acres offers a great opportunity for the State of Illinois to develop centers for sporting, recreational, touristic, amusing, urban farming, and any kind of ecofriendly activities that could match efficiently with St Louis city's crowded and busy life in a mutual benefit through attractive landscape development investments. The State urgently needs decentralized trends that bring steady economic opportunities everywhere else out of Chicago area.

A DIGITAL RECORD-KEEPING APP FOR AVIATION TECHNOLOGIES' STUDENTS

Matthew Harrison

Associate Professor, Aviation Technologies

Karen J. Johnson

Associate Professor, Aviation Technologies

Over recent years, the aviation industry has transitioned from using the traditional paper record-keeping system, known to aircraft operators as logbooks, for documenting maintenance actions on aircraft to using software/digitally-based record-keeping systems for the same actions. These various software packages can be tailored for use in almost any type or size of aviation operation giving the company and its maintenance personnel near-limitless flexibility to meet their specific needs. As many options as there may be, finding a package that could be tailored for use in an educational setting is tedious and not cost beneficial. Students in the Department of Aviation Technologies at SIUC are still learning to record maintenance entries in these paper logbooks and have virtually no exposure to the now-commonplace digital record-keeping software that they will be working with upon graduation and entrance into the workforce. To bridge this transition, this project includes the development of a digital record-keeping system using a smartphone/tablet application that is designed specifically for use in the aviation classroom, on a smaller scale yet still resembling the record-keeping applications found in the larger aviation industry.

DEVELOPING AND TEACHING FOR THE INTERNET OF THINGS (IOT)

Mr. Martin Hebel
Associate Professor

Associate Professor Martin Hebel will present his research, texts & software authorship, and teaching in relationship to the Internet of Things (IoT) with a table display. IoT is the use of the internet to monitor and control a wide assortment of 'smart' devices such as in home automation and building management. Very simple and cost efficient systems can be developed for IoT use for a wide variety of applications for both personal and profession use in medical, industrial or agricultural system. These system may be accessed via web browsers or dedicated smart phone Apps. Professor Hebel has worked with the University of Florida to wirelessly collect data from citrus as it is shaken off the tree; worked with the University of Sassari, Italy on wireless collection of biomedical information; has written multiple texts and software packages; and is a co-inventor on a patent for monitoring of crops for precision irrigation. Students from his IoT class will be on hand to demonstrate and discuss their class project on wireless monitoring and control via the internet.

HOW TECHNOLOGY WILL CHANGE OUR FASHION SENSE AND FORECAST OUR VISION ATTENTIONS

Yuli Liang

Lecturer, Fashion Design & Merchandising

Seung-Hee Lee

Professor, Fashion Design & Merchandising

Recently, fashion and technology are becoming much more incorporated, looking towards more combination of digital innovations. For example, Amazon has innovated a device for consumers to take style-selfies by exploring their voice control platforms. The device is called as “the Echo Look,” Amazon’s virtual style consultant. Based on this device, we are in the process of fashion Artificial Intelligence (AI) research which aims at analyzing consumers’ acceptance and purchase intention so as to further predict how will consumers’ fashion sense being affected by new technologies. The other ongoing project is through an interdisciplinary collaboration team with Electrical and Biomedical Engineering colleagues. We tried to apply to forecast vision attentions of images from fashion magazine advertisements based saliency algorithms. In this research, we applied our developed deep features-based saliency algorithms to predict vision attentions for visual information from common magazine advertisements and editorials. The analysis based on these established algorithms will be beneficial for fashion manufacturers, retailers, and merchandisers.

SOMETHING COMPLETELY NEW: THE STUDIO AT SIU

Shannon McDonald, AIA

Associate Professor, Architecture and Interior Design

The fall 2017 Masters Comprehensive Studio had the design challenge of integrating an elevated solar powered automated transit network, designed by the engineering students at San Jose State University (SJSU), into downtown San Jose CA connecting the North and South Campuses of SJSU. The studio was sponsored by Mr. Ron Swenson of INIST. In 2010, Ron co-founded INIST, The International Institute of Sustainable Transportation along with Professor Buff Furman of SJSU. The students integrated this new movement technology into their passively designed buildings and resilient urban planning strategies. Due to the climate of San Jose, active HVAC systems would not be necessary if attention was given to creating

passively ventilated, cooled and heated buildings. The students successfully combined these passive ideas in designing hotels, housing and a transit center. Resiliency is important in San Jose due to the drought/flooding cycles and major earthquake zone. The urban design strategies incorporated how to create ways to manage water and provide safety along with the ability for people to manage after an earthquake. Their work with passive strategies will be presented along with the resilient urban planning designs and was submitted to Innovation 2030.

THE FLIPPED AVIATION MAINTENANCE CLASSROOM: USING VIDEO-BASED INSTRUCTION AS A DEMONSTRATION TOOL IN METALS PROCESSING LAB WORK

Don Morris

Assistant Professor, Aviation Technologies

Matthew J. Romero

Assistant Professor, Aviation Management and Flight

Flipped learning changes the way students receive class-related information to engage them in learning activities rather than act as passive observers (Lage, Platt, & Treglia, 2000). When viewed outside normal class times, video-based instruction (VBI) delivers information that prepares students for lab activities. This research compared the performance of students in a traditional lab to those in a modified lab that used VBI to deliver demonstration in a metals processing course in an aviation maintenance technology curriculum. Conducted over a two-year period, this study examined the differences in the performance in two different sections of the same lab-intensive metals processing classes that require a high degree of manipulative skill development. Demonstration is normally done by the instructor, but the flipped lab replaced the in-person instructor demonstrations with demonstrations available via YouTube. At the end of both courses, the students' attitudes towards the class, the time to complete lab projects, and the overall course grades were recorded and later analyzed. Results indicate that VBI can be an appropriate teaching tool for manipulative skills when used in a lab environment.

UNDERSTANDING KNOWLEDGE COLLABORATION: INTERIOR DESIGN AND HEALTH CARE MANAGEMENT

Laura M. Morthland

Associate Professor, Interior Design Program Director

Robert Rados

Assistant Professor, Health Care Management

This study explores the possible “gaps” of pedagogical experience for health care management and interior design professionals, for better understanding and application of evidence-based research regarding the benefits of healing environments, within the healthcare sector. A KAP (Knowledge, Attitude & Practice) survey focused on responses from current industry professionals in the fields of interior design and healthcare management is being conducted, to examine where breakdowns in communication, understanding and awareness may be occurring in practice - in an effort to address possible interventions of community building and knowledge collaboration at the undergraduate level.

PARENTAL DESOCIALIZATION IN SPORT

Julie Partridge, Ph.D.

Associate Professor, Department of Kinesiology

This research is an exploration of the experiences of sport parents whose children have left the athlete role, and how that desocialization has been experienced by the parents. Numerous studies have examined the transition experiences of athletes themselves, but little attention has been given to how parents, many of whom have very strong identities tied into the sport parent role, cope with leaving that role either voluntarily or involuntarily. In the first phase of this research investigating the desocialization experience of sport parents, the researchers are conducting in-depth, semi-structured interviews with participants, which will later inform the creation of a sport parent desocialization measure.

INDOOR ECOTHERAPY AND DEMENTIA

Robert Rados

Assistant Professor, Health Care Management

Jun Kim

Assistant Professor, Public Health and Recreation Professions

To investigate the potential benefits of “indoor ecotherapy,” this study analyzed the influence of memory care residents with limited access to the outdoors viewing a video of nature photos with classical music. Residents were measured before and after viewing the video using a “tranquility scale,” along with memory care staff observations of each resident (before and after) as part of the analysis. Tranquility levels reported by residents were higher after the intervention than before the intervention. Tranquility levels among residents perceived by staff members was higher after the intervention. The findings suggest that Health Care Management and Recreational Therapy collaboration associated with indoor ecotherapy may enhance the quality of life for residents residing in a memory care facility.

MILLENNIALS, HEALTH CARE MANAGEMENT AND MORTUARY SCIENCE

Robert Rados

Assistant Professor, Health Care Management

Anthony T. Fleege

Associate Professor, Mortuary Science

Abel Salazar

Clinical Instructor, Mortuary Science

This research focuses on conducting survey research to gather current information from millennials, representatives of hospice, mortuary science academics, and funeral home directors to determine current alignment regarding end of life practices and attitudes toward death and dying. Analysis of findings will be used to enhance the development of Health Care Management and Mortuary Science practice to promote awareness of common concerns for appropriate support for dying persons and their families.

THE RELATIONSHIP BETWEEN STUDENT CHRONOTYPES AND PERFORMANCE

Michael F. Robertson

Associate Professor, Aviation Management and Flight

Steven C. Goetz

Assistant Professor, Aviation Management and Flight

Each person experiences a day in a different way. We each have our chronotype, which is a personal pattern of circadian rhythms that influence our physiology and psychology (Pink, 2018). Everyone experiences physiological and psychological highs and lows throughout the day. Most individuals experience a peak in the morning and a physiological and psychological trough in the midafternoon. Chronobiologists have suggested that for most people, we should not attempt to do activities that require focus and attention to detail during these physiological and psychological troughs (Pink, 2018). Aviation students take a end of the course test, referred to a check ride, at the end of every flight course. A check ride can be a 3-4 hour oral and flight evaluation that takes a significant amount of focus and attention. The purpose of this research would be to investigate the chronotypes of the Aviation Flight Students at Southern Illinois University and try to determine if there is a relationship between check ride performance and the time of day that these check rides occur. This research could be helpful to improve safety and increase student performance in the flight training environment.

FINDING FUTURE AVIATORS

Matthew J. Romero

Assistant Professor, Aviation Management and Flight

Steven C. Goetz

Assistant Professor, Aviation Management and Flight

The aviation industry needs a labor supply sufficient to sustain growth, which is predicted to outpace the supply of new pilots. The North American airline industry will need approximately 5,746 pilots per year through 2036, but the flight training industry has only averaged only 1,394 new qualified pilots annually over the past decade (FAA, 2017). The increase in the number of commercial aircraft and the limited output of qualified pilots

means the commercial aviation industry is in the middle of a growing labor shortage (Higgins et al, 2014), which means we need to attract and train more new pilots to maintain our passenger airline system.

Using a one-question, open-ended, online survey instrument, this research attempts to provide information that could help collegiate aviation programs identify how current student-pilots became interested in piloting as a career path. This information can help recruiters and enrollment managers optimize resources by focusing on more common “points of exposure” that have been fruitful in the past, and more interesting is the potential to use the responses to identify novel ways to recruit student-pilots into the aviation industry.

FATIGUE AWARENESS OF COLLEGIATE FLIGHT STUDENTS

Matthew J. Romero

Assistant Professor, Aviation Management and Flight

Michael F. Robertson

Associate Professor, Aviation Management and Flight

Issues related to fatigue are common across transportation industries, and the National Transportation Safety Board identified the need for fatigue education that raises awareness about sleep (Marcus & Rosekind, 2016). Although the impacts of fatigue in the airline industry are more acute, fatigue in the flight training industry also deserves investigation because many collegiate flight students will eventually become airline pilots. Replicating previous research focused on the fatigue-awareness of collegiate flight instructors (McDale & Ma, 2008), this study aims to evaluate the fatigue-awareness of students enrolled in a professional pilot program. As late adolescents, collegiate flight students are a unique population in the aviation industry, and the effects of fatigue impact them differently than older pilots (Buboltz, Brown, & Soper, 2010). Evaluating the fatigue-awareness of collegiate flight programs will help aviation educators better understand the effectiveness of human factors education aimed at fatigue awareness education. To evaluate their fatigue-awareness, this study revised the survey instrument developed by McDale and Ma (2008) to make it more relevant to collegiate flight students. Results indicate that collegiate flight students are generally aware of their own fatigue, but they do not make lifestyle changes to reduce their fatigue.

SENIORS FOR SENIORS: UTILIZING THE ADPIED MODEL TO DESIGN A DENTAL PUBLIC HEALTH PROGRAM AT AN ADULT DAY CARE FACILITY

Jennifer S. Sherry, RDH, MEd
Associate Professor, Dental Hygiene

Kennedy J. Cole
Senior Dental Hygiene Student

Marissa A.M. Asbury
Senior Dental Hygiene Student

Research shows that untreated caries and abscesses, periodontal disease, oral cancer, and tooth loss are at epidemic proportions. The need to establish a consistent way to assess and educate the senior adult population is critical. Senior dental hygiene students utilize the ADPIED model (Assessment, Dental Hygiene Diagnosis, Planning, Implementation, Evaluation, and Documentation) to identify needs through oral cancer evaluation. A part of the puzzle is to educate as well as determine referral sources for these clients. This session will highlight the specific ways the ADPIED model is utilized in the dental hygiene curriculum through the Community Oral Health Practicum course. This course works through establishing a target population all the way to the evaluation process.

TEACHING ADVANCED AUTOMOTIVE ELECTRONICS WITH OPEN-SOURCE MICROCONTROLLERS

Ralph Tate
Associate Professor, Automotive Technology

The emergence of the Maker community has prompted the development of affordable, open-source hardware and software such as the Arduino microcontroller development platform. The Arduino has been utilized at all levels of formal STEM education to introduce embedded control systems and code development. This flash talk will highlight our efforts to improve the electronics knowledge and skills of Automotive Technology students through the introduction of Arduino-based hardware and software exercises that progress from demonstrating basic circuit functions to emulating vehicle control modules and diagnostic scan tools.

BLOCKCHAIN TECHNOLOGY AND IOT SECURITY

Andy Wang

Dean, College of Applied Science and Arts

Soon we will be riding on autonomous vehicles connected and communicated locally and globally. As more and more devices are connected to the Internet of Things (IoT), security and privacy become significant concerns regarding how these devices are discovered and interacted with each other in a fully autonomous and distributed manner. One distributed denial of services (DDoS) attack, for instance, to one connected autonomous car running within a fleet network could cause remarkable loss of life and property. Conventional security and privacy approaches do not work well for IoT because of its decentralized topology and constrained computing resources on embedded devices. The decentralization and distributed nature of blockchain offers potential solutions to security and trust in IoT applications, providing improved resilience, encryption, auditing and transparency. However, the current blockchain model, as an append-only distributed ledger with a time-stamped set of transaction blocks, requires high-power computing and high bandwidth overhead and delays, which are not suitable for most IoT devices. This research aims at a simplified blockchain model and architecture that are inexpensive in computing requirements while maintaining high security and trust.

VTI-CASA Reunion 1950–2018

On *Saturday, April 14, 2018*, the SIUC College of Applied Sciences and Arts Dean's Office will host a reunion event for alumni and all current and former students, faculty, and staff of the College.

Please mark your calendar for 5 PM on April 14th and join us at the Garden Grove Event Center, 1215 E. Walnut St., Carbondale (behind the University Mall).

Hors-d'oeuvres and cocktails begin at 5 o'clock, followed by a presentation of the College's history.

RSVP via telephone: 618-536-6682

or via web: <http://asa.siu.edu/reunion/>

SIU

Southern
Illinois
University

CARBONDALE

Southern Illinois University
College of Applied Sciences and Arts
1365 Douglas Drive
Carbondale IL 62901-6604