

VALLEY ENGINEERING, SCIENCE & TECHNOLOGY CLUB

www.engineersaz.com

April 2017 NEWSLETTER

Editor: Noelle Jobson

The Engineers Club is a social organization which meets regularly for lunch with a speaker on a technical topic. Spouses are invited and many attend regularly. Short field trips are occasionally scheduled. Membership is open to anyone who has worked in or related to the engineering or scientific fields. Meetings are held at 11:30am on the first Friday of each month (unless otherwise noted), October through June, at Briarwood Country Club, 135th and Meeker in Sun City West, AZ
Visitors are always welcome - - just call Reservations at (623)546-9112 to let us know you are coming.

April 7 PROGRAM

The Softer Side of Robots and their Human Wearable Applications

Panagiotis Polygerinos, PhD, ASU, Ira A. Fulton School of Engineering

Panagiotis (Panos) Polygerinos is an Assistant Professor of Engineering with the Ira A. Fulton Schools of Engineering at Arizona State University. His research interests focus on the realization of tasks that are essential to the design, implementation and integration of novel robotic systems and mechatronic devices that have significant potential to improve patient care and human activity.

Prof. Polygerinos received a Bachelor's degree in Mechanical Engineering from the Technological Educational Institute of Crete, Greece in 2006 (top of his class), a M.S. degree in Mechatronics (with distinction), and Ph.D. in Mechanical Engineering from King's College London, London, U.K., in 2007 and 2011, respectively. As a Ph.D. candidate and under the supervision of Prof. K. Althoefer in the Centre for Robotics Research at King's College London, Panagiotis designed, developed and evaluated novel miniature MRI compatible sensors for cardiac catheters. In 2012, he joined as a postdoctoral fellow with the Harvard Biodesign Lab (Prof. C. J. Walsh) and the Wyss Institute for Biologically Inspired Engineering at Harvard University, where he worked on soft robotic systems and wearable devices for people with upper extremity disabilities. He continued his research as a Wyss Postdoctoral Fellow of Technology Development at the Wyss Institute and collaborated with researchers, engineers, industrial and functional apparel designers, clinicians, and business professionals to develop new wearable assistive and medical technologies.



Editor's Notes - Noelle Jobson

How Do We Fix Systems Engineering?

"How is it that we continue to encounter failure of important and complex systems where everything thought to be necessary in the way of process control was done, and yet despite these efforts the system failed? Each time this occurs, we as an engineering community vow to redouble our efforts to control the engineering process, and yet such events continue to occur. The answer cannot lie in continuing to do more of the same thing while expecting a different outcome. We need to rise above process, to examine the technical, cultural, and political mix that is "system engineering", and to examine the education and training we are providing to those who would practice this discipline." - Michael Griffin, Former NASA Administrator

This excerpt is from a talk given to the staff at Draper Laboratory in 2012. Like the proverbial elephant in the room, we as systems engineers, program managers, directors, etc., recognize that systems engineering processes are broken. As stated, this talk was from 2012—while many systems at that time were highly automated, tactical and functional safety critical RTOS based technology in the field rarely, if ever, employed the types of technology we've been discussing over the past year here at VEST, for example, AI applications. There seems to be an expectation from the general public that we will be able to jump over the technological challenge chasm "by 2020" and have seamlessly integrated self-driving vehicles on our highways.

I would love to hear from my fellow VEST members on this topic. I encourage you all to send comments and ideas to me at nojobson@gmail.com for publication in the upcoming newsletters. Looking forward to hearing from you all!

May 5 PROGRAM

Good News in Alzheimer's Disease

Dr. Edward Zamrini



Ed Zamrini, MD, a neurologist with expertise in cognitive and geriatric neurology, joined Banner Research as director of the memory center at Banner Sun Health Research Institute in July 2015. Dr. Zamrini joins the team from University of Utah, where he served as a professor of neurology. He has 25 years of expertise in the study of the brain and memory, while also teaching at various universities and participating in review boards. He earned a doctor of medicine from American University of Beirut, located in Beirut, Lebanon.

FUTURE MEETINGS

May 5, 2017

Title: Good News in Alzheimer's Disease
Speaker: Dr. Edward Zamrini, Director
Of Cleo Roberts Clinic, Banner Sun
Health Research Institute

June 2, 2017

Title: The Challenge of AI Applications in Design and Validation of Self-Driving Vehicle Technology
Speaker: Noelle Jobson, CEO IGM Consultants

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Asst. Treas.	Darlene Hester	TBD
Asst. Treas.	Don Block	TBD

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Past President	Jackie Rice	TBD

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Abstract:

The inherent compliance in soft material robotic systems can enable capabilities and task versatility not found in traditional rigid-bodied robotic systems. The robots of the future will use soft design approaches to provide a more conformal, unobtrusive and compliant means to interface and interfere with the human body, and will be able to monitor, assist, or augment capabilities of individuals. For example, elastomeric and textile actuators powered by pressurized fluids (i.e. pneumatics or hydraulics) can offer several desirable features including robust, lightweight structures, inexpensive development, proven fabrication methods, and simple as well as complex motion paths with simple inputs. Furthermore, these actuators can provide compliance, fast actuation speeds, and most importantly safe human interaction, making them ideal for wearable applications.

This talk will focus on soft components as well as integrated systems that are tested in realistic settings. The first part will cover the principle of operation of soft composite elastomeric actuators, as well as their design and fabrication. The second part of the talk will demonstrate the design, fabrication and sensing principles required to realize an assistive soft robotic glove for people with hand impairments that consists of a wearable textiles with soft actuators specifically designed to match the range of motion of the hand. As part of this work a control hardware system was designed and demonstrations with patients were performed to evaluate the ability of the soft robotic glove to carry out functional grasping.

TREASURER'S REPORT APRIL 2017

General Fund Balance: \$5567.81

Scholarship Fund: \$1539.42

March Membership Total: 140

50/50 Lottery Winner: Bob Linville \$102

LUNCHEON MENUS

April 7: #1 Yankee Pot Roast or #2 Pan-fried Trout Almondine. Both entrées come with Salad, Creamy Mashed potatoes, Chef's vegetable, & Ice Cream w/cookie.

May 5: #1 Chicken Pot Pie or #2 Baked Cod. Both entrées come with Salad, Saffron Rice, Peas & Carrots, Peppermint Ice Cream w/cookie.

RESERVATION POLICY

The cost of the monthly luncheon is \$20 cash or check.

The reservation deadline is 6PM Monday before the meeting.

Late reservations cannot be guaranteed the regular meal.

Call Dave Whitehouse to cancel your reservation.

Note that the full cost of the luncheon will be charged for "no-shows" and cancellations after 5PM on Wednesday before the meeting.

Please have cash or make out your check in advance.

RESERVATIONS Dave Whitehouse (623) 544-0942

February speaker, Hal Lind, with Tod Hamilton and Rick Cecil.



For more information on our speakers, please visit our website at www.e2engineersaz.com