2015 IEEE WIE Summit USA East
Program Abstracts

Women Investing in Women
Ellen Weber
Robin Hood Ventures
Financial capital isn't the only way women can invest in other women. There's also social capital, political capital and emotional capital. Angel investor Ellen Weber, who's also Temple's entrepreneurship head, will speak about all the ways women can support women, including concrete tips on how to ask for introductions, how to help women founders, and how to improve your brand.

Women, Engineering and the Power of Publishing
Tiffany Gasbarrini
Springer Nature Group Media
The underrepresentation of women in engineering disciplines is growing more pronounced- an alarming reversal of the steady gains that had been made over the last few decades. Women's contributions are invaluable assets in the drive to solve humanity's grand challenges through engineering research and implementation, and therefore this downward trend is a significant concern for serious STM publishing houses.

Our goal as publishers is a vehement re-invigoration of our dedication to supporting women engineers, using our position as respected global knowledge disseminators to gain greater visibility for their work. Publication is even more important for women engineers than for their male colleagues, as we strive to garner equal consideration of our accomplishments. This presentation describes current initiatives designed to highlight the work of women engineers, and demonstrates how and why to leverage scientific publication in order to engender greater success.

Workshop: Wearable Microcontrollers
Leslie Birch
Wearable Tech @ Adafruit
Participants will work with Leslie to design their own wearable circuit. A GEMMA sewable microcontroller, conductive thread, and LED sequins will be used in this workshop. The goal of this workshop is to demonstrate effective ways to engage youth in STEM activities. This workshop will guide participants on how to keep circuits, programming, and engineering fun for youth. There is no additional charge to attend this workshop. Kits will be available for purchase, and may be shared. Seating is limited, attendees with kits will be given seating priority.

Women and Confidence
Barbara Taylor
JanBara & Associates
There's no doubt about it -- women handle Confidence differently than men. It's why women don't negotiate for salaries or go after promotions or new jobs with the seemingly

ease that men do. Lack of Confidence can also impact our ability to Influence. This is why, during a meeting, a women's recommendation may be overlooked in favor of a man's same idea presented later. As it turns out, Confidence is an essential element for Leadership Presence. So while Confidence and Leadership Presence won't get you promoted, its absence will certainly impede your progress (especially if you're a women or person of color.)

Barbara Taylor will talk about the inner and outer worlds of Confidence, Competence and Influence and how the three intersect. She will provide a model for participants to examine their own Confidence levels and determine where they would like to make a change. Additionally, Barbara will provide some actions and behaviors that can help participants project an aura of confidence .... especially when they are not.

Huan Xu, Lindsay Claiborn
University of Maryland, Multimedia Journalist
We present a broadcasting platform promoting the voices of women engaged in science, technology, engineering, and mathematics (STEM) fields. The podcast, titled "Beyond the (Micro)scope" is used as a motivating application to discuss the accessibility and usefulness of using podcasting as a platform to engage public audiences in STEM fields. In particular, how can outreach be effective with regards to targeting young girls and women interested in STEM.

Powering Your Career: Overcoming Obstacles to Realize Your Full Potential in Technology
Theresa Hennesy
Comcast Cable
In the past, women faced a tough time breaking into technology – or any traditionally male-dominated business or industry, for that matter. Stretching back into even high school education, society pushed women into very specific gender-defined roles – and away from others. Getting an education in a field such as technology often meant being the only woman in the class, and pursuing a career in technology often meant being the only woman on the team. Women going down this path had to be focused, determined and probably a great deal more outspoken than their male counterparts.

The good news is, this is changing fast. The generation of women that came before has blazed a trail for the young women now entering the workforce or who are early in their careers. The even better news is that many companies are specifically seeking women to expand diversity of thought and skill sets on their technology teams.

Technology now offers abundant opportunity for skilled women willing to invest the time and effort to secure the educational background they need to break in and the will to build and develop a career in this fast-growing field.

This session will offer advice to young women considering a career in technology on how to get in, and for young women early in their careers on building their careers.

Panel A: The Journey
Moderator: Denise Griffin, IEEE R1 WIE Coordinator
Panelists: Isabella Szutkowski, Dr. Charlotte Blair, Dr. Vesna Zeljkovic
AT&T Services, Inc., ANSYS, Inc., The Lincoln University
There are many paths that a person can take during the course of their career and difficult decisions which must be made along the way, especially in terms of pursuing work/life balance. Join this panel to learn about how three successful and satisfied individuals survived the ups and downs of their own personal journey, how they managed to balance a stimulating engineering with other aspects of their lives, and how they made the choices that they did.

Workshop: 3D Printing
Captain Thomas Murphy
ARDEC
Additive Manufacturing (AM) is the process of building a part up, layer by layer. The first AM technology was invented in 1983, called Stereolightography (SLA) and shortly after, in 1989, Fused Deposition Modeling (FDM) emerged. Since the 1990's, several more AM processes have been invented and used for Rapid Prototyping. In the late 2000's, more advancements in the processes and materials allowed for end-use parts to be produced. Since 2013 the American Society for Testing and Materials (ASTM) has created a standard for AM terminology as F2792-12a, which categorizes seven processes of AM into the following categories: binder jetting, direct energy deposition, material extrusion (FDM), material jetting, powder bed fusion, sheet lamination and vat photopolymerization (SLA). Many of these processes are used for prototypes to aid engineers in their design process. This can result in time and costs savings, but also allows for more detailed changes to occur more rapidly. The 2014 Wohler Report stated in 2013 there was a 34.9% growth in worldwide use of AM, and more importantly the 2015 Wohler Report stated approximately 29% of AM produced parts were for end-use; functional parts. Recently, GE has developed a Direct Metal Laser Sintered (DMLS) part in their LEAP jet engine. They will use the AM produced metal fuel nozzles that have been designed from an assembly of 20 parts to 1, is 25% lighter and five times as more durable than the traditionally manufactured part. AM technologies are now being researched and applied to US Army projects to enhance the future soldiers' capabilities.

Empowering Your Potential
Karen Panetta
Tufts University
Your career path should be as dynamic and unique as you are. Dr. Panetta will discuss the diversity of careers that thrive on your engineering and technology experiences and how you can put your goals into action as you plan your next quantum leap to an exciting future. Karen brings her perspectives as an industry professional, academic professor, mentor, inventor, entrepreneur, leader of international organizations and as the Founder & Editor-In-Chief of the Award winning, IEEE Women in Engineering magazine.

Since a one-size life plan does not fit all, you will learn how to tap into your own individuality to create your own future. The list of opportunities is limitless and so is your

potential. This talk will inspire you to move forward and develop a career path that meets your own life goals.

Women and Girls in Engineering: Progress and Challenges in Education and the Workforce
Lynn Molter
What progress have women engineers made in the workforce and higher education? What challenges remain? Are there myths that still need to be busted? What are the circumstances for school, preschool, and even younger girls; how are they being encouraged toward or discouraged from future interest in engineering? Can we identify opportunities throughout the pipeline for supporting girls and women to successfully pursue, and advance and thrive in engineering? These are some of the questions that will be addressed in this presentation that will include opportunities for input from the audience.

Journey to Leadership
Kathleen Vigue
Johnson & Johnson
The Engineer of the Future will have a global outlook and experience through working in different parts of the world, take on new positions and gain different experience. - Bob Reed, Kellogg
-What outlook does the Engineering Leader of the future need to have?
-What experiences will help our future Engineering Leaders to enable their engineering teams to solve global problems such as how to provide energy from fusion, provide access to clean water, secure cyberspace, or, in my world, engineer better healthcare?
- Before we try to answer that, let me briefly take you on my leadership journey and share some of my experiences. Then we will take a "peek" into the future and translate those experiences to that which I believe will be required for you – the engineering leaders of today and tomorrow.

Panel B: The University Perspective
Moderator: Rhonda Farrell, IEEE R2 Region Vitality Coordinator
Panelists: Jessica Boles, Dr. Vesna Zeljkovic, Dr. Reena Dahle
University of Tennessee, The Lincoln University, SUNY New Paltz
Improving opportunities in STEM for faculty and students depends on active engagement, mentoring, and culture change to address the social and environmental barriers that have precluded success for many across industry. Learn about the innovative ways our panelists are creating community, opening up opportunity, and providing necessary support and guidance on the road to retaining ever higher rates of women engineers and faculty across the globe.

Salary Negotiation - Creating a Win-Win Between You and the Company
Anthony Gold
Anthony's Desk
Not negotiating your initial job offer could mean losing out on nearly $600,000 over your career! When you are starting in a new job, it's the most critical (and easiest) time to negotiate around compensation.

In an existing job, when is the best time to ask for a raise? What is negotiable, what is not?

One of the most challenging aspects of your professional career is ensuring you are fairly compensated. All too often women (and men) fail to appreciate their true value to an organization and how best to negotiate their total compensation package.

This workshop will discuss the following:
• Negotiation techniques to create the best win-win for you and the company
• The psychology of negotiating
• Tools and tips for determining your value
• How to prepare for salary discussions (for both new and existing jobs) \
Using a combination of presentation, discussion, and Q&A – this workshop will help you sharpen your negotiation skills and prepare you to effectively negotiate your compensation for your next job offer or salary review.

Leadership Development for Women: Overcoming Stereotype
Mary Pat Farrell, Steven Stall
Rockwell Automation
With the PEOPLE value as our foundation, we are committed to making Rockwell Automation a place where our employees are excited to come to work. Where they can build great careers. Where they can do their best work and trust that the company will contribute its best to them.
Creating a culture of inclusion is essential to achieving this commitment. We believe that through diversity, we access the best talent. Through inclusion, we inspire the best in our people. And through engagement, we can optimize performance.
We have great leaders in senior management that's driving change within our company. With data from a retention study, our leaders drove out the top four reasons women left the organization and then began driving cultural change with continued focus on the traditional white male culture. The results have been stellar, a 49 percent increase of women and a 16 percent increase in female managers. We recognized the key to retaining top female talent is to create an environment that promotes advancement while maintaining balance with family priorities. Developing talent with a focus on inclusion and diversity, is a high priority for Rockwell Automation.

Our strategy is simple:
• Raise awareness through dialogue, education and training
• Understand and remove barriers through internal Inclusion & Engagement change teams and councils and business/functional cultural assessment
• Create differentiation by becoming an employer of choice because of our Culture of Inclusion
• Measure impact and progress through various methods like surveys, focus groups and metrics
This strategy is designed to build a culture that reflects our global organization; optimizes our differences for the good of our people, our customers and our company, and creates a place where great employees want to come and stay.
To further drive change, Rockwell Automation has created three key programs with company-wide and partner impact. The Inclusion Change Team is a cross-functional team chartered with identifying barriers to inclusion and creating recommendations for improvement. We also have diverse talent reviews, aimed at filling the management review pipeline with women, which has expanded to other minority groups. Lastly, we're leading the inclusion message to Rockwell Automation distributors to help achieve our goals. The results of these efforts have led to an increase in female sales leaders over the past 5 years and 50+ participants in inclusion workshops from distributor partners. We believe that our

inclusion journey isn't just about increasing the percentage of women. Instead, it's about creating an environment where they can do their best work by being included and engaged.

Demo: Wearable Electronics
Monica Vanterpool
Vaughn College of Aeronautics and Technology
This paper presents a wearable electronics workshop which aims to increase the under-represented female high school students' interest and participation in engineering. This is achieved by letting these female high school students learn what engineering is, and exposing them to a hands-on environment with the activities related to both girls' favorites and engineering product design and implementation. We describe the development of the workshop and how it impacts on the under-represented female high school students' interests in engineering. To the end, we feel that a short three-hour hands-on workshop may have the potential to change girls' perception of engineering, further enhance their interests in technical matters and finally pursue a career in the field of engineering and technology.

Efforts to Promote Diversity in Engineering
Kavita Goverdhanam
Promoting and fostering diversity in STEM disciplines to attract talent is key to enduring technology advancements. In this talk, initiatives that have been undertaken at some of the IEEE conferences which have resulted in attracting and staining diversity, as well as the lessons learned will be discussed. Key challenges for achieving long term success will also be addressed.

Workshop: TechGirlz
Sarah Johnson
TechGirlz
You can help middle school girls embrace technology by running your own hands-on workshop. Come learn how first-hand by participating in an intro to coding workshop run using TechShopz in a BoxTM – free technology workshop plans from TechGirlz, a Philadelphia-based nonprofit dedicated to reducing the gender gap in technology. We will also review other workshop topics that are available such as Scratch and Raspberry Pi, Little Bits, Introduction to Linux and more.

Creativity is the Key to Longevity!
Tiffanie Stanard
CEO of Prestige Concepts
When entering into any field as a woman especially a male-dominated industry such as engineering, women must use their creativity to advance as leaders in their careers. Why creativity? Creativity develops innovative ideas on bootstrapping, when you cannot find an investor. Creativity helps you build the brand and customer base of your company with limited resources. Creativity opens the door to potential partners to grow your network.

The difference between men and women in various industries is the opportunity given. Women may have to create their own opportunities to prove their leadership skills and

knowledge of their field. This session will focus on developing creative ideas to enter or grow in the technology industry.

Pitch Perfect Leadership: Applied Lessons for Women in STEM
Kathleen Murphy
University at Buffalo
This paper describes some of the common gender barriers found in science and classical music. Universal lessons in leadership as practiced by some of the world's elite women orchestra conductors are presented as examples for aspiring women leaders in science, technology, engineering, and mathematics (STEM).

Factors that Influence Young Women to Pursue Engineering and Technology: A Case Study
Arshitha Basavaraj
National Institute of Technology, Karnataka, India
The purpose of this study is to address the major factors of motivation, that drive young women to enter Engineering and Technology, and understand their contribution and correlate the same along with other factors, to the dropping rates of women at various levels of the career ladder. This case study was conducted in National Institute of Technology, Karnataka (NITK), one of the premier engineering institutes in India, second after the popular IITs. Techniques of Stratified Random Sampling were used to collect primary data with Questionnaire as the instrument. The survey was conducted randomly and in person.

Enticing Women to Computer Science with Es (Expose, Engage, Encourage, Empower)
Shahnaz Kamberi
DeVry University
There is a shortage of women in computer science. An approach is needed to increase women and girls' interest in computer programming. To identify the best framework for both K-12 and higher education institutions to use to influence girls' view of Computer Science (CS), a thematic analysis of over 30 research papers and resources from the National Center for Women and Information Technology (NCWIT) website was conducted. Summarizing the different successful approaches taken by various researchers in increasing the number of girls and women studying CS and categorizing the approaches based on similar themes revealed that there are four common methods used to encourage girls to pursue CS. The Four Es model—Expose, Engage, Encourage and Empower—is derived from this analysis. The model can be used by institutions as a framework to increase women and girls' interest in studying and pursuing computer science careers.

TINKERING with Stereotypes: An Effort to Retain Female STEM High School Students
Katherine Czemiejewski, Julie Fetzer, & Dana Voll
TINKER
It was not until entering engineering that we, as three Caucasian middle class females, become part of a minority group. When we explored the reasons for this, we discovered that

common societal misconceptions about women in STEM fields lead females away from STEM career paths. A few of the major misconceptions we explored included (i) "engineering does not benefit humanity", (ii) "you must be a genius", and (iii) "there are no women in engineering". Our goal was to tackle these misleading stereotypes head on by the creating TINKER, an engineering camp at the University at Buffalo geared towards high school girls. While developing the camp, we focused on debunking these three falsehoods in order to show the participants the valuable impact engineering has on humanity as well as the real people involved in engineering. We will discuss the aspects of the camp that made it successful.

Longitudinal Studies of an Outreach Program for Seventh Grade Girls: Evidence of Long-Term Impact
Grazia Todeschini
Alstom Grid
Camp Reach is a two-week summer engineering enrichment program for seventh grade girls, with continuing mentoring, communications, and activities for participants as they advance from seventh grade through high school. Camp Reach was founded in 1997 and the selection of participants has been designed to allow for longitudinal studies to evaluate the long-term effects of the program. This paper will present the main features of Camp Reach, the methodology used to perform the longitudinal studies, relevant results and a summary of lessons learned.

The Joy of Working in Wireless/RF Engineering
Neerja Sharma, Aye Moe
Metropolitan Transportation Authority of New York City, Alcatel-Lucent USA
This paper presents the perspective of two women RF Engineers who have chosen to continue their career in this specialized engineering field. This was pursued in spite of transitions and challenges that came along with being woman, having to manage a family and raising children. The objective of this paper is to share the experiences ranging from school, office and field work, work and family life balance, as well as volunteering and mentoring youngsters at school.

How a 7-Year-Old Girl Sparked a STEM Revolution With One YouTube Video
Gabe Young, Chad Collins
In 2012, Jordyn Collins at age 7 started a YouTube channel with her dad Chad Collins about her favorite toy, LEGO. What started as a family passion project evolved into nationwide LEGO event called Brick Fest Live which has attracted over 150,000 attendees. With LEGO being a natural building block into STEM education, their next event Young Innovators Fair has more mass appeal and is built to inspire the next generation of leaders and innovators.

Closing Session
Providence More
IEEE
The challenges of attaining equal representation and retaining women in technology are two highly discussed issues in the high tech industry today. Many organizations are focused on

inspiring girls to pursue careers in science, technology, engineering, and math (STEM); and on providing sustainable support for women to advance their careers. Regardless, it is predicted that more than half of the career women employed in STEM related fields will leave the tech industry in their mid-thirties. Join us for an engaging closing session. We'll harness our collective brainpower to build on the positive potential of women in tech. Leveraging "appreciative inquiry" methodology and design thinking tactics, we'll collaboratively develop ideas, solutions, and prototypes that help women develop sustainable support networks that usher in opportunity, encourage growth and drive success.