

# CHANGING THE CONVERSATION

USC Viterbi has been at the forefront of changing stereotypes about engineers: what they do, who they are, what they look like, and how their work affects our lives.

## Some recent highlights:

### “THE NEXT MACGYVER”

The global competition (in partnership with the National Academy of Engineering) imagined the first great TV show with a female engineer main character. On July 28, 2015, five winners (out of nearly 2,000 entries) were paired with top Hollywood producers to inspire a new generation of engineers.

### USC VITERBI STUDENTS

Almost **39%** women make up the Fall 2015 freshman class; the percentage of female engineering undergraduates stands at **35%** vs. the national average of **19%**. **28%** women are enrolled as undergraduates in Computer Science vs. the national average of **12%**.

### LEADING A NATION-WIDE INITIATIVE

Over **148** engineering school deans signed a letter drafted by leading engineering deans in the nation under the leadership of Dean Yannis C. Yortsos for an initiative to change the conversation and enhance diversity and inclusiveness in engineering. This initiative was acknowledged by the President of the United States on Aug. 4, 2015, at the first-ever White House Demo Day on inclusive entrepreneurship. The dean's initiative consists of the following:

1. Partner with national organizations to craft, implement and assess a comprehensive Diversity Plan for our engineering programs.
2. Commit to at least one K-12 community outreach program with targeted goals and measures of accountability aimed at increasing the diversity and inclusiveness of the engineering student body in our institutions.
3. Develop strong partnerships between research-intensive engineering schools and non-PhD granting engineering schools serving populations underrepresented in engineering.
4. Initiate and implement proactive strategies to increase the representation of women and other underrepresented parts of the society in our faculty.

### GRAND CHALLENGES SCHOLARS PROGRAM

Nationwide, more than 2000 engineers will graduate annually as Grand Challenges Scholars as a result of the Grand Challenges Scholars Program (GCSP). Pioneered by USC Viterbi, Duke and Olin College of Engineering in 2009, this program is now adopted by more than 120 engineering schools nationwide and it is spreading globally. It stresses, in addition to the traditional engineering education the following:

- Research
- Interdisciplinarity
- Global Context
- Innovation and Entrepreneurship
- Service Learning and Societal Responsibility

### GLOBAL GRAND CHALLENGES SUMMIT

A USC Viterbi undergraduate team won silver at the first-ever global business plan competition during the Global Grand Challenges Summit held in Beijing, China (Sept. 13-16, 2015). The contest, conceived and organized by Dean Yortsos and the NAE, featured fifteen teams from the U.S., China and the U.K.

## By The Numbers

**19%**

share of women who receive engineering degrees, which according to a 2015 report from National Student Clearinghouse, has actually fallen in the last 10 years

**7 HOURS 38 MINUTES**

average number of hours a day kids between the ages of 8 and 18 spent consuming television and Internet media (Kaiser Family Foundation, 2010) — up from 6 hours, 21 minutes in 2004

**35%**

women in USC Viterbi's undergraduate classes

**0**

number of TV shows with female engineers, of 275 prime-time television shows, according to a 2012 study by Professor Stacy Smith and the Media, Diversity and Social Change Initiative at the USC Annenberg School



“If she can see it, she can be it.”

— actress Geena Davis, founder, Geena Davis Institute on Gender in Media



## USC Viterbi at a Glance

USC Engineering began in 1905

### Student Population

Approximately 2,600 undergraduate and 5,200 graduate students

### Faculty

180 tenure-track faculty, with 62 endowed chairs and professorships, 64 NSF Career Awardees, 22 full-time, tenure-track NAE members (36 total affiliated), 7 NAS members, 11 MIT TR35 winners

### Academic Departments

Eight

### Alumni

More than 60,000

### Annual Research Expenditures

More than \$185 million, with more than 46 research centers and institutes

### Research Centers and Institutes

#### Home to:

- » Information Sciences Institute (ISI)
- » The Ming Hsieh Institute
- » The Daniel J. Epstein Institute
- » Innovation Node-Los Angeles, National Science Foundation's (NSF) National Innovation Network
- » Two (now graduated) National Science Foundation (NSF) Engineering Research Centers (ERC)
  - › Integrated Media Systems Center (IMSC)
  - › Biomimetic MicroElectronic Systems Center (BMESC)
- » University Center of Excellence of the U.S. Department of Homeland Security - Center for Risk and Economic Analysis of Terrorism Events (CREATE)
- » DOE/White House Materials Genome Initiative Center
- » Center for Energy and Nanoscience at USC
- » Biomedical Informatics Research Network (BIRN)
- » HTE@USC (Health, Technology and Engineering@USC)
- » LADWP/DOE Smart Grid Demonstration Project
- » USC-Lockheed Martin Quantum Computation Center
- » Center for Interactive Smart Oilfield Technologies (CiSoft)
- » Pratt & Whitney Institute for Collaborative Engineering (PWICE)
- » Airbus Institute for Engineering Research (AIER)
- » Infosys Center for Advanced Software Technologies (CAST)
- » NIH Center on Genomics and Phenomics of Autism
- » USC Energy Institute

#### Affiliated with:

- » Alfred E. Mann Institute for Biomedical Engineering (AMI)
- » USC Institute for Creative Technologies (ICT)
- » USC Stevens Center for Innovation

### Education and Outside-the-Curriculum Centers

- » Division of Engineering Education
- » KIUEL (Klein Institute for Undergraduate Engineering Life)
- » VAST: Viterbi Adopt-a-School, Adopt-a-Teacher
- » Maseeh Entrepreneurship Prize Competition (MEPC)
- » Viterbi Student Innovation Institute (VSI<sup>2</sup>)

USC Viterbi

School of Engineering

## THE NEXT MACGYVER



THE BIRTH OF  
A NEW KIND  
OF HERO

DEAN'S REPORT 2015



## The “Next MacGyver” and Beyond

In the last several months we have launched a number of new national initiatives with the goal to “change the conversation” about engineering. In the process, we are helping dismantle stereotypes about engineers – **what they do, who they are, what they look like.**

These stereotypes have left many of our women and traditionally underrepresented segments in engineering on the sidelines. For engineering to remain society’s engine of innovation, this *must change.*

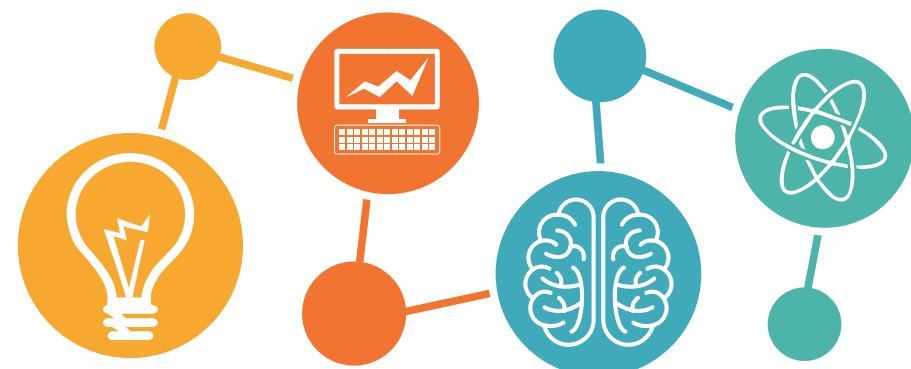
As the chair of the Diversity Committee of the ASEE Engineering Deans Council, I recently drafted a pledge letter from engineering deans to take concrete steps to ensure that our institutions provide inclusive educational experiences. I am pleased to tell you that in less than one month, more than 148 engineering deans have signed to date. President Obama celebrated these commitments at the White

House Demo Day for inclusive entrepreneurship on August 4, 2015, an event I attended on behalf of my fellow engineering deans.

In a separate initiative, July 28, 2015 was the culmination of the six-month long “The Next MacGyver” competition – sponsored by Google and Ford, but conceived and co-organized by USC Viterbi, the National Academy of Engineering and MacGyver creator Lee Zlotoff. Five talented writers — several of them engineers — were selected from a field of nearly 2,000 entrants, to write a script for a new TV show starring a female engineer. Just as *CSI* led to a surge of interest in forensics, we hope that one or more of our finalists’ visions for a strong female engineer lead will make it to the TV screen. This will galvanize middle-school and high-school girls everywhere to become the new face of engineering.

The new *phase* of engineering –  
The new *face* of engineering.

**Yannis C. Yortsos**  
Dean, USC Viterbi  
School of Engineering



**“THE NEXT MACGYVER”**

**A NEW KIND OF HERO IS BORN**

*After nearly 2,000 submissions from five continents, five winners emerged in the global contest for the first great TV series with a female engineer main character.*

## MEET THE “NEXT MACGYVER” WINNERS AND MENTORS

### “SECS (SCIENCE AND ENGINEERING CLUBS)”

**Name:** Jayde Lovell  
**Mentor:** Roberto Orci, writer/producer (“Star Trek,” “Scorpion,” “Sleepy Hollow,” “Hawaii Five-O,” “Fringe”)  
**Genre:** High School Dramatic Comedy  
**Logline:** Emily, a beautiful but snotty teenager, must join the high school Science and Engineering Club to avoid getting expelled, after accidentally setting fire to the school gymnasium during a science fair. She helps the club achieve their dreams of one day coming first at FIRST, the national science and technology competition for teens. It’s “Glee” meets “Mean Girls,” with an educational element embedded in each episode.



**“RIVETING”**

**Name:** Miranda Sajdak  
**Mentor:** Clayton Krueger, senior vice president of television, Scott Free Productions (“300: The Final Odyssey”)  
**Genre:** World War II Drama  
**Logline:** During World War II, a local prom queen’s life is turned upside down when her fiancée is killed overseas. Determined to make sure that never happens again, the girl goes to work as an engineer, learning and perfecting her trade to do her part for the war effort.



**“RULE 702”**

**Name:** Beth Keser  
**Mentors:** Lori McCreary, CEO and founder of Revelations Entertainment; president of Producers Guild of America (“Madam Secretary,” “Through the Wormhole with Morgan Freeman”); Tracy Mercer, vice president of development, Revelations Entertainment  
**Genre:** Adventure / Procedural  
**Logline:** A young and beautiful engineering and science prodigy decides to forego corporate life to pursue a career as an expert witness. She spends her new life traveling across the country to testify in torn-from-the-headlines cases, but in each case she finds a mystery that requires a keen mind and scientific investigation to find the truth.



**WHAT’S NEXT?**

The five winners will develop pilot screenplays by the end of 2015, under the mentorship of top Hollywood producers. In partnership with Creative Artists Agency (CAA), the nation’s top Hollywood talent agency, resulting scripts will be packaged for possible sale to major networks and distributors.

**“ADA AND THE MACHINE”**

**Name:** Shanee Edwards  
**Mentors:** America Ferrera, actress/producer (“Ugly Betty,” “Sisterhood of the Traveling Pants”), Gabrielle Neimand (“The Thing,” “The Last Exorcism”) Take Fountain Productions  
**Genre:** Historical / Steampunk  
**Logline:** In 1832, 17-year-old Ada Lovelace, the real-life daughter of the poet Lord Byron, meets the first computer engineer, a young and dashing Charlie Babbage. A highly skilled mathematician, Ada generates logarithms and creates programs for Charlie’s wild new calculating machines. Together, they adventure through the steam age, obsessed with creating a super machine that can be programmed to “think” like a human.



**“Q BRANCH”**

**Name:** Craig Motlong  
**Mentor:** Anthony E. Zuiker, creator and executive producer of the “CSI” franchise  
**Genre:** Spy Action  
**Logline:** You know those gadgets that spies use on dangerous missions? The shoe phones, the laser pens, the gas pellets hidden in watches? Someone goes in the field and invents those. This is her story.



In addition, the five winners have all been invited to attend the Conrad Foundation’s (named after the Apollo 12 astronaut Pete Conrad) Spirit of Innovation Challenge Summit this April 2016 at the Kennedy Space Center in Florida. This is an annual multi-phase competition empowering high school students (ages 13 – 18) from across the globe to use STEM (science, technology, engineering and math), innovation and entrepreneurship to develop technologies and solutions to solve real-world challenges in sustainability.