



2019 Engineering Deans

Public Policy Colloquium

Fairmont Hotel • Washington, DC • February 4–6, 2019

Quick Takes

Session 1



Kazerounian, Kazem, Dean & Professor
School of Engineering
University of Connecticut



Hesham El-Rewini, Dean & Professor
College of Engineering and Mines
University of North Dakota

February 5, 2019

What is “Quick Take”?

Presentations will be on influencing public policy and enhancing public awareness on engineering education and practice, and could include examples about working with legislators locally or nationally, working with education policy makers (K-16), innovative engagements with movie and media industry and social media



The Engineering Education Diet: Is it Well-balanced?

Lorenzo M. Smith, Dean

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College of Engineering and Computer Science
California State University, Sacramento

2019 Engineering Deans Council Public Policy Colloquium (PPC)
The Fairmont Washington, D.C., February 4 - 6, 2019

Lorenzo M. Smith, Ph.D.

Email: LSMITH@CSUS.EDU

Plenty of Sweets

- Multitude of Non-Profits for K-12
- Multitude of university-affiliated K-12 programs
- “Whiz-Bang” Activities for middle school
- “Whiz-Bang” and R&D Activities for high school
- Valuable for building confidence and getting hooked.



This is fun
and easy!



21st Century Workplace

Global Awareness, Etiquette

Conflict Resolution, IP, Patents

Budgets, HR, Teamwork, Speaking

Critical Thinking, Business Plans

Professional Subjects

Sciences and General Education

Inspiration, Discovery, Preparation

Lorenzo M. Smith, Ph.D.

Email: LSMITH@CSUS.EDU

Sufficient Meat & Potatoes

- Resources poured into curriculum content.
- Resources poured into curriculum delivery.
- Significant attention toward accreditation.



Inspiration, Discovery, Preparation



Not Enough Fruit & Veggies

This is so
not for me.

Resources are plentiful for materials, supplies, and scholarships, but they often are not enough to allow for an increase in capacity to serve more students due to a lack of funding to increase staffing.

ALSO...

Programs die on the vine after the faculty champion leaves or after industry cuts support.

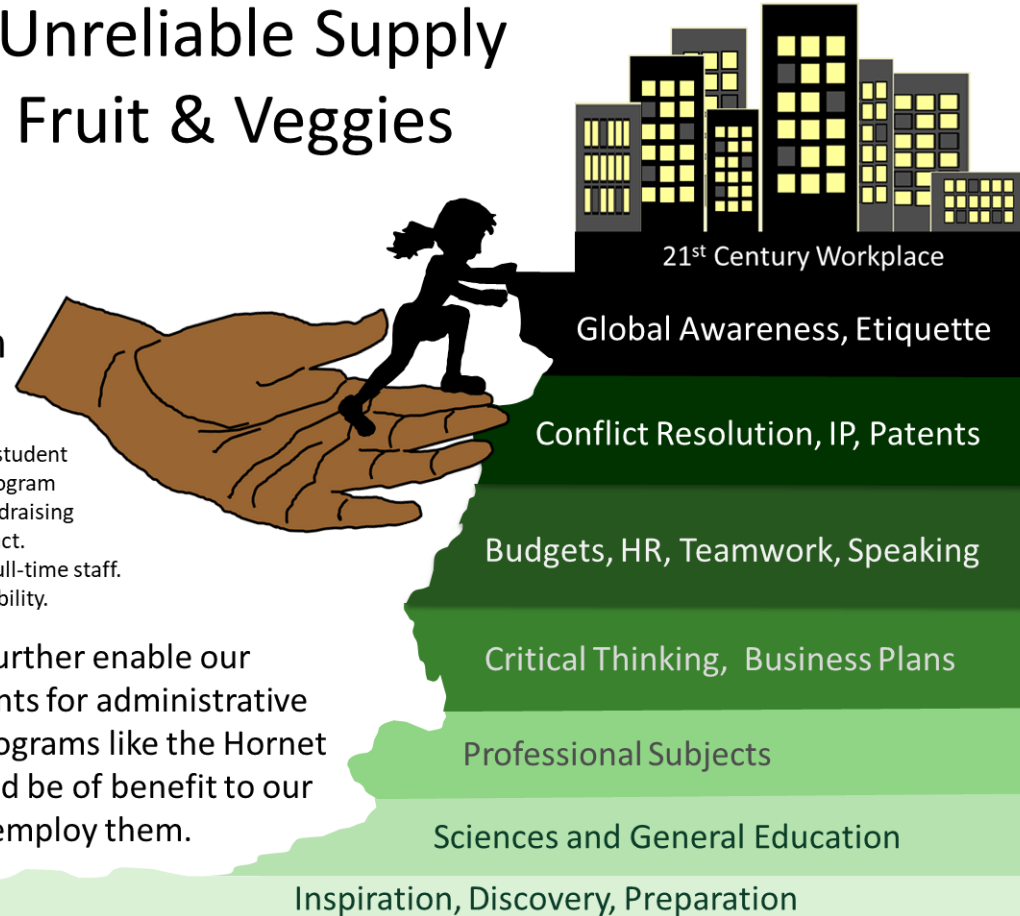


Our Unreliable Supply of Fruit & Veggies

The Hornet Leadership Program

- Multiple Cohorts of about 12
- \$1,000 Annual Scholarship to each student
- Cohort Cost = \$50K for Two Year Program
- Sustained Year-by-Year through Fundraising
- Must grow to make significant impact.
- Cannot grow successfully without full-time staff.
- Need endowment for long term stability.

Public policy support to further enable our ability to build endowments for administrative support for leadership programs like the Hornet Leadership Program would be of benefit to our students and those who employ them.



WMU-CEAS Innovation Day

A Celebration of Entrepreneurship of All Ages

Houssam Toutanji

College of Engineering and Applied Sciences



WESTERN MICHIGAN UNIVERSITY
College of Engineering
and Applied Sciences



WESTERN MICHIGAN UNIVERSITY
College of Engineering
and Applied Sciences

WMU Innovation Day

This outreach event drew students from K-12 to our campus to show off their innovative products and ideas. We invite faculty and staff, engineering professionals and members of our community and State legislature to attend. Students get a chance to gain experience in presenting their products and prototypes. Winning student teams in various categories receive medals and prizes.

Students must have:

- A product or service that is unique, innovative and has a clear market need.
- A proof of concept or working prototype to show.
- A product that uses existing technology or is a modification of existing technology for a creative new product or service.
- An understanding about future plans for the product or service.



WESTERN MICHIGAN UNIVERSITY
College of Engineering
and Applied Sciences

Innovation EXPO 2018



360 students



144 Teams



13 Schools



45 Judges



1,200 snacks



865 Pizza Slices



\$12,580 Prize Money



60 Medals



WESTERN MICHIGAN UNIVERSITY
College of Engineering
and Applied Sciences

89 teams from area K-12 and over 50 teams from our College



Light Bulb Remover
The Gagie School – Third Grade



Improving the Functionality of Volleyball Carts
College of Engineering and Applied Sciences



Rack My Ride
Comstock STEM Academy



Crutch Casez
Gull Lake Middle School



Instant Off-Road Wheelchair
Kalamazoo Central High School

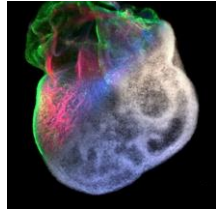
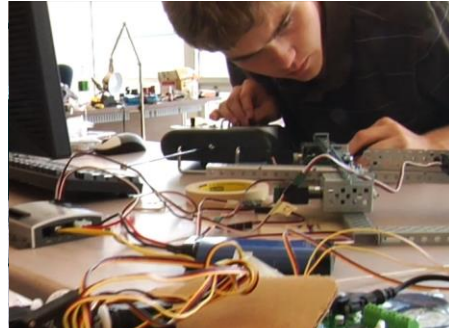


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picoCTF

an easy way to expose a lot of young minds to the field of cybersecurity

Carnegie Mellon University
College of Engineering



JONATHAN CAGAN

Interim Dean
College of Engineering

Overview

- Carnegie Mellon created picoCTF, a free, online video game that challenges students to solve real-life cybersecurity problems.
- The game is a series of problems that students must solve in order to gain clues about a mysterious storyline.
- Students may work individually or on teams, where they can divide and conquer the challenges.
- Two goals:
 - introduce kids to the field of cybersecurity before college
 - identify exceptional talent



Example problem:

A password is hidden somewhere at this URL. Can you find it?

<http://2018shell1.picoctf.com:8930>

Solution:

Students have to “view source” in a web browser, and inspect text that is hidden from normal view.

Success to date

- Over 65,000 students have participated in picoCTF since its initial launch in 2013.
- 60 percent of participants said they were **more interested** in pursuing a career in cybersecurity as a result of playing picoCTF 2018.
 - only 3 percent claimed to be “less interested”
- 25,000 players (in 2018) x 0.6 = **potentially 15,000 or more people could consider a career in cybersecurity as a result.**



The photo above was in a feature by *The New York Times* about CyLab and picoCTF. It shows Carolina Zarate, who played the game five years ago as a high school student and now is a student at CMU studying computer security. She is also now on the picoCTF problem design team.

Personal testimonials

"Students were very engaged. The activity is exciting because students hear about hacking but don't know where to start. [...] Students loved the leaderboard feature, and were fighting to be at the top."

- teacher from Mineola High School, Mineola, NY

"Problem solving disguised as hacking; hacking disguised as problem solving. This is the stuff that engages students."

- teacher from Oak Hills High School, Oak Hills, CA

"picoCTF had a huge role in my decision to study computer security in college."

- student in Pleasant Hills, PA



K L Elbakidze
@ctl678

Following

So proud of these 6th graders in the [@picocft](#) hacking competition. They had the highest scores in our school. [#HCDEengage](#) [#teched](#) [#Hacking](#)

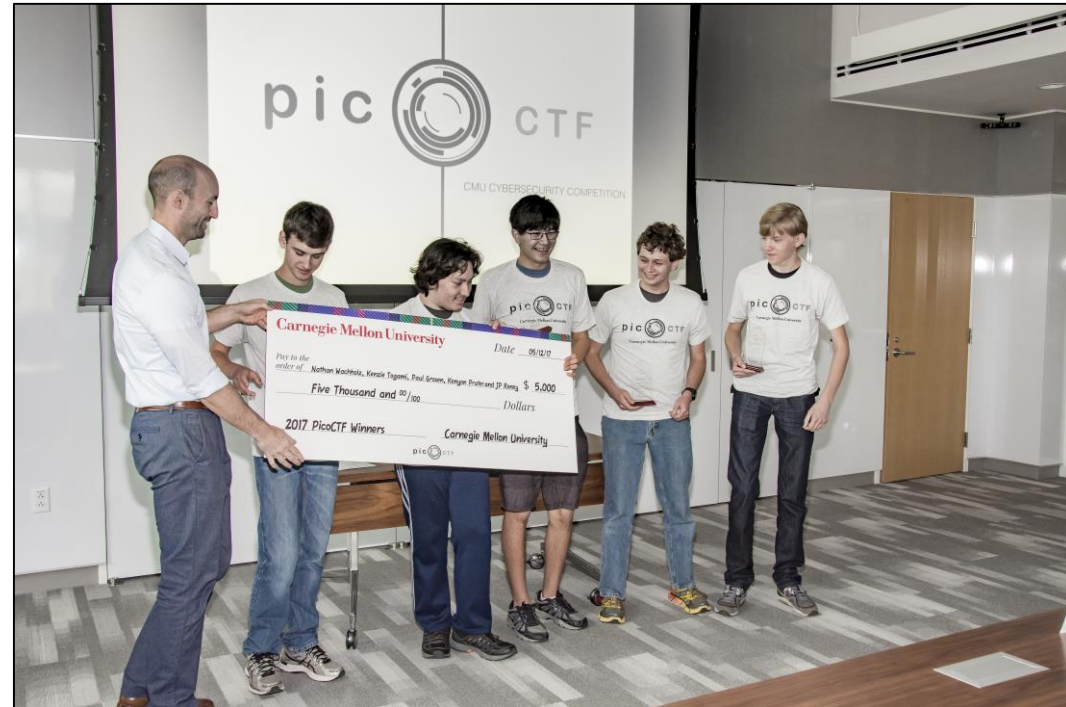


1:39 PM - 20 Apr 2017 from Chattanooga, TN

5 Retweets 15 Likes

Wrap-up

- picoCTF 2019 will run September 27 – October 11, 2019.
- Schools, companies, universities can take part in picoCTF.
 - For example, Ryerson University in Canada sponsored a Canadian-only scoreboard during picoCTF 2018.
 - Canadian students were ranked on this scoreboard and could win their own set of prizes.
- Learn more at picoCTF.com



The winning team during picoCTF 2017 receives its \$5,000 cash prize during an awards ceremony at CMU.

College of Engineering

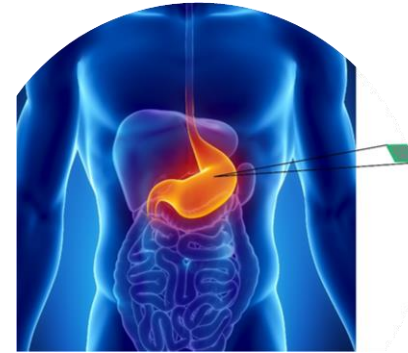
ADVANCED COLLABORATION



Carnegie
Mellon
University

Partnership-Building Strategies

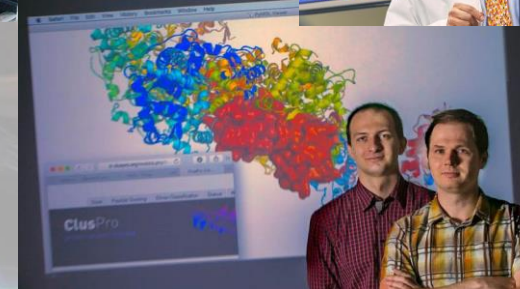
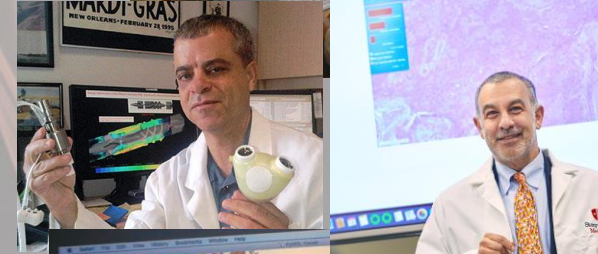
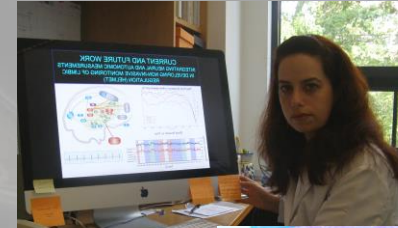
- Advancing **Convergence Research** in Medicine and Engineering
- Educating **Engineers for the Technocene**



Fotis Sotiropoulos
SUNY Distinguished Professor and Dean
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[@Fotis_Sot](#)

The Stony Brook University Institute for Engineering Driven Medicine (IEDM)

- A joint venture: **Renaissance School of Medicine (RSoM)** & the **College of Engineering and Applied Sciences (CEAS)**
- **Research thrusts:**
 - ✓ Neuroscience & engineering
 - ✓ Regenerative medicine
 - ✓ Drug discovery
 - ✓ IoT technologies for aging in place
 - ✓ AI for precision medicine
- **Cross-disciplinary training:** Clinically-driven vertically integrated projects for undergraduates and graduate students across medicine and engineering



 Renaissance School of Medicine
Stony Brook University

**FAR
BEYOND**

 Stony Brook
University

College of Engineering
and Applied Sciences

MAKING SCIENCE FICTION COME TO LIFE

IEDM Partnerships

- **Strategies:**

- ✓ Leveraged RSoM relations and strategically engaged CEAS Dean's Council members to build regional research partnerships with major clinical partners:



Albert Einstein College of Medicine

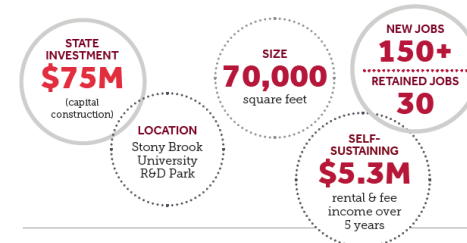


THE UNIVERSITY HOSPITAL



Mount Sinai

- ✓ Worked closely with SBU government relations to make the case to the governor's office and the legislature
- ✓ Part of SBU's Research & Development Park
- ✓ Translational research focused on economic development



- **Achievement:** Raised **\$75M from NYS** for a new building to house the IEDM (under construction)



New Engineering Building

- **CEAS** by numbers:
 - 1 in # of BS degrees in **New York State**
 - 24/34 in # of BS/MS degrees **Nationally**
 - 1420 average SAT scores
- **Goal:** Raise **\$100M** to build new building to support education for the tech-driven economy
- **Strategies:**
 - ✓ Articulate regional economic impact
 - ✓ Engage industry & alumni to invest in new facilities
 - ✓ Advocacy group: CEOs making the case directly with New York State legislators
- **Achievement:** Raised **\$25M** from the state to begin building design. Fundraising for the rest under way!



Fotis Sotiropoulos
@CEASdeanSBU

Visiting NYS assemblyman Fed Thiele with John Cameron, Founder & CEO of Cameron Eng. & Associates of NY, Rahul Alreja, President, VJ Inspection Services, & Richard Humann, President and CEO @H2MAandE, to advocate about the need for a new engineering bldg @CEASSBU @stonybrook.





Thank you!

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NYU

TANDON SCHOOL
OF ENGINEERING

ON THE CUSP OF CREATING A MORE LIVABLE CITY

Dean Jelena Kovačević, NYU Tandon

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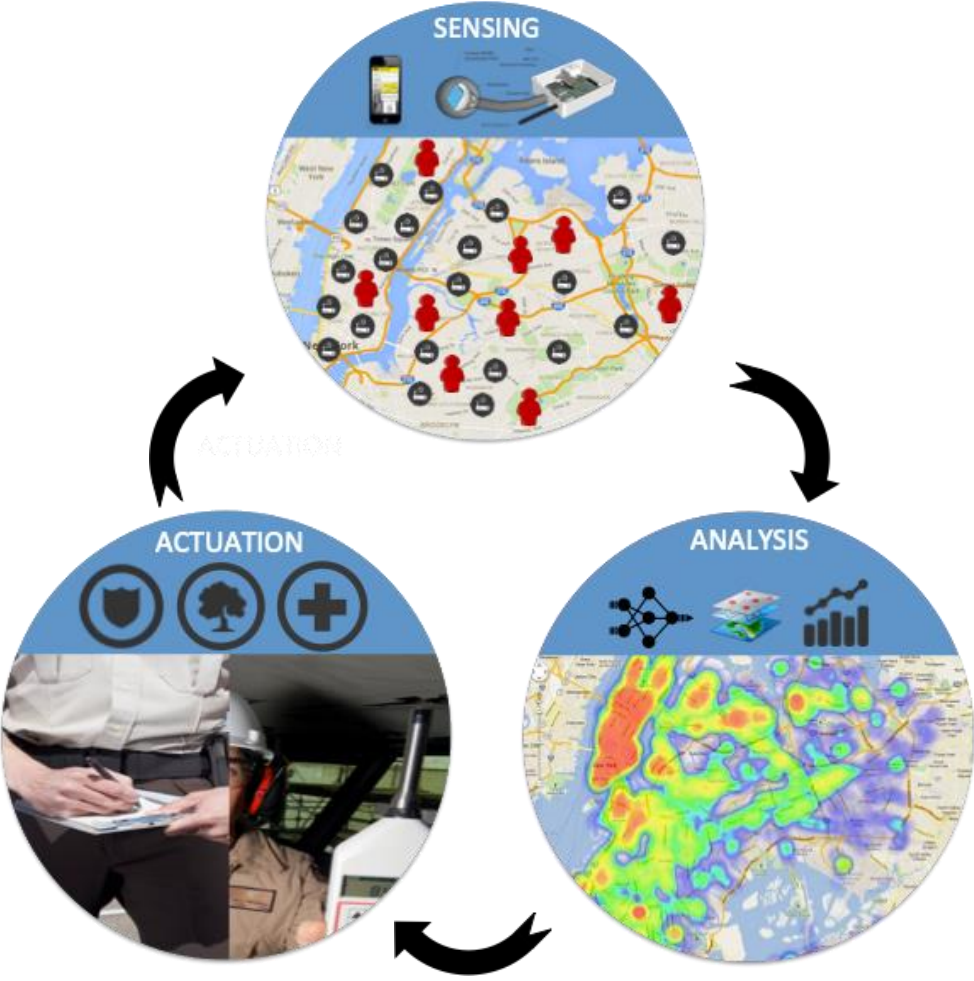




SONYC (Sounds of New York City)
NOISE IMPACT

Estimated **9 out of 10** adults in NYC are exposed to harmful levels of noise







Dean Jelena Kovačević, NYU Tandon

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