Welcome to the 2021
GIRLS Make STEM with Heart event

IEEE Region 6

S.K. Ramesh, Ph.D., Fellow IEEE
Director AIMS² Program & Professor, Electrical and Computer Engineering
California State University, Northridge
2016-17 Vice President IEEE Educational Activities Board

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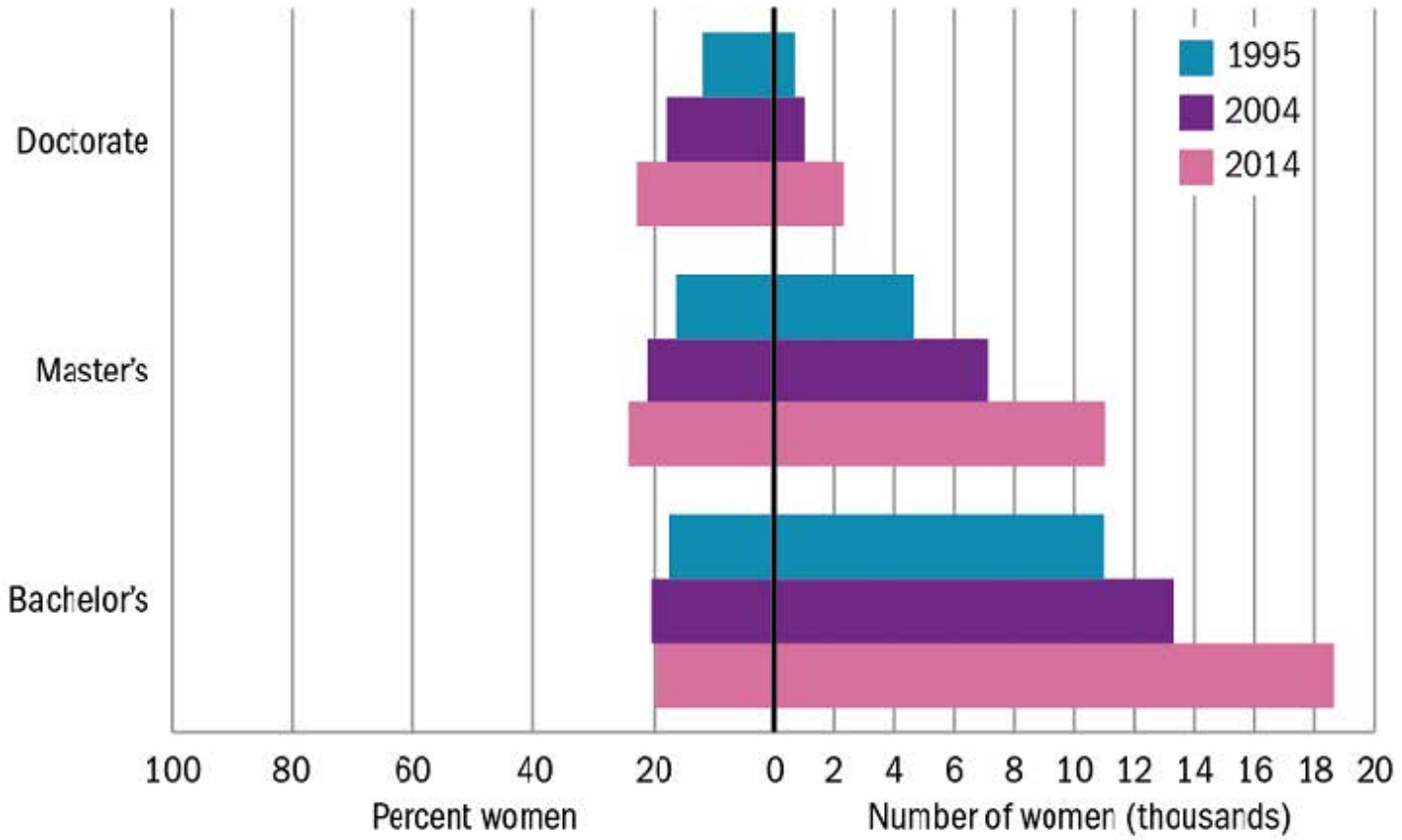
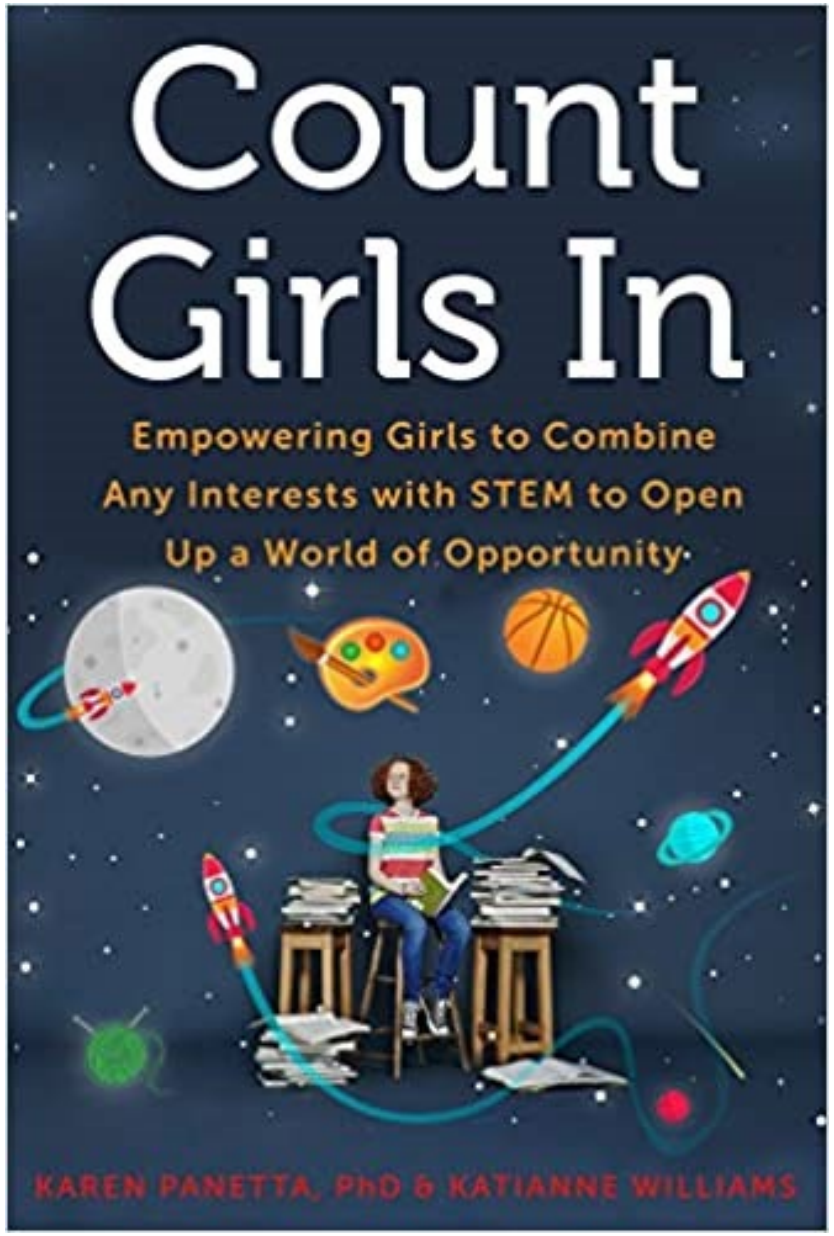
Low participation field for women: Engineering, 1995, 2004, 2014



Karen Panetta, Scottie Austin Wilson, and Ramesh

IEEE EAB Awards Ceremony – 2016

Pre-University Educator Award



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The CSU System

- 474,600 students in 23 campuses
  - Men – 44%
  - Women - 56%
- 44,641 in graduate Programs (2015)
- 105,693 degrees (2014-15)
- CSUN is largest Campus (41,548)

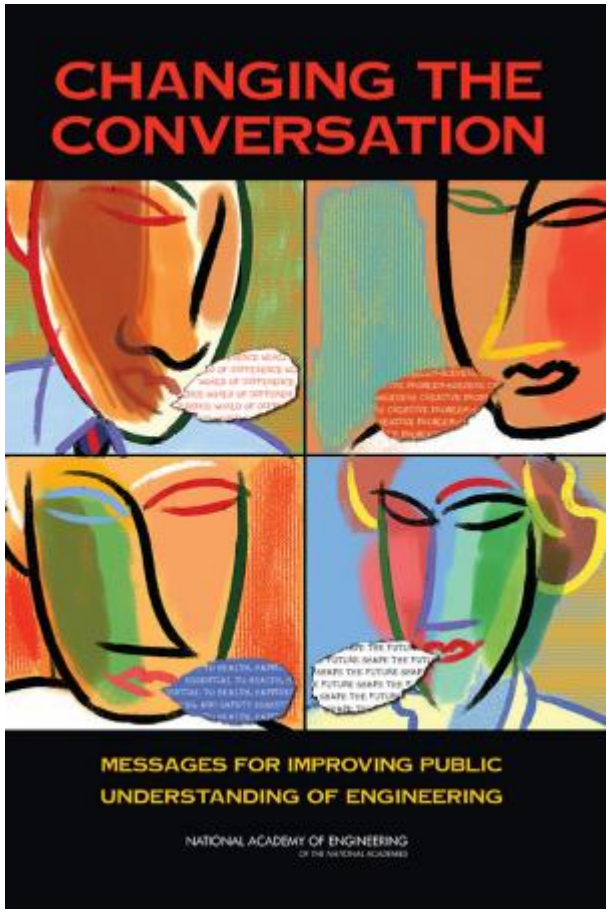
CSUN

COLLEGE OF
ENGINEERING AND
COMPUTER SCIENCE

A rapidly changing landscape

Changing the Conversation

No profession unleashes the spirit of innovation like engineering. From research to real-world applications, engineers constantly discover how to improve our lives by creating bold new solutions that connect science to life in unexpected forward thinking ways. Few professions turn so many ideas into so many realities. Few have such a direct and positive impact on people's everyday lives. We are counting on engineers and their imaginations to help us meet the needs of the 21st century.



"Changing the Conversation", National Academy of Engineering, 2008

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Technological advancement will have a major influence across the globe

AI

Robotics

Biotechnology

Big data

Future networks

Connected devices

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Sign posts on the horizon: Challenges and Opportunities

- Challenges:
- Pollution, Congestion, Lack of access to Clean Water, Housing
- Climate change – Forest Fires, Hurricanes
- Healthcare/Quality of Life
- Unemployment – Jobs lost to automation

- Opportunities
- Sustainable Technologies
- Clean Energy
- Transportation
- Smart Cities
- Smart Grid
- Digital Technologies
- AI, IoT, 5G, ML

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Adapting for success: Future Proof the World

Lift up your hearts. Each new hour holds new chances for new beginnings


IEEE
Advancing Technology for Humanity
IEEE Strategic Plan
2020-2025

Technology for the Benefit of Humanity

"Where IEEE Entrepreneurship and Humanitarian Activities Meet"

IEEE Entrepreneurship

https://entrepreneurship.ieee.org/

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Transforming Lives
Inspiring Careers

EPICS
IN IEEE
Engineering Projects in Community Service

- EPICS stands for “Engineering Projects in Community Service”. It blends service learning with civic engagement to address critical human needs by engaging university students worldwide in hands-on design projects that are implemented **in the community** and **for the community.**

EPICS in IEEE Pillars

Access & Abilities

Solving accessibility issues and creating independence

.

Education & Outreach

Helping young learners discover the wonders and possibilities of STEM

Environment

Answering environmental and sustainability concerns

Human Services

Connecting engineering to community needs

EPICS in IEEE by the Numbers

IEEE Foundation

EPICS IN IEEE

Since 2009 ...

103 PROJECTS	5 CONTINENTS	35 COUNTRIES
AWARDED $583,577	AVERAGE PROJECT AWARD $5,665	

TOTAL PERCENTAGE OF PROJECTS BY CONTINENT

ENCOURAGING WOMEN IN STEM

36% OF UNIVERSITY STUDENTS INVOLVED HAVE BEEN WOMEN

42% OF PRE-UNIVERSITY STUDENTS INVOLVED HAVE BEEN WOMEN

TOTAL PERCENTAGE OF PROJECTS BY TYPE

- ACCESS + ABILITIES 34%
- EDUCATION 28%
- ENVIRONMENT 22%
- HUMAN SERVICES 16%

Throughout the Years

15 PROJECTS IN 2015	19 PROJECTS IN 2016	15 PROJECTS IN 2017

AIMS² Program @CSUN

CSUN
COLLEGE OF ENGINEERING AND COMPUTER SCIENCE

Attract, Inspire, Mentor, Support Students

AIMS² HSI STEM Grant Program

- Mentoring
- Research Projects
- Transfer Success
- Degree Completion
- Career Preparation

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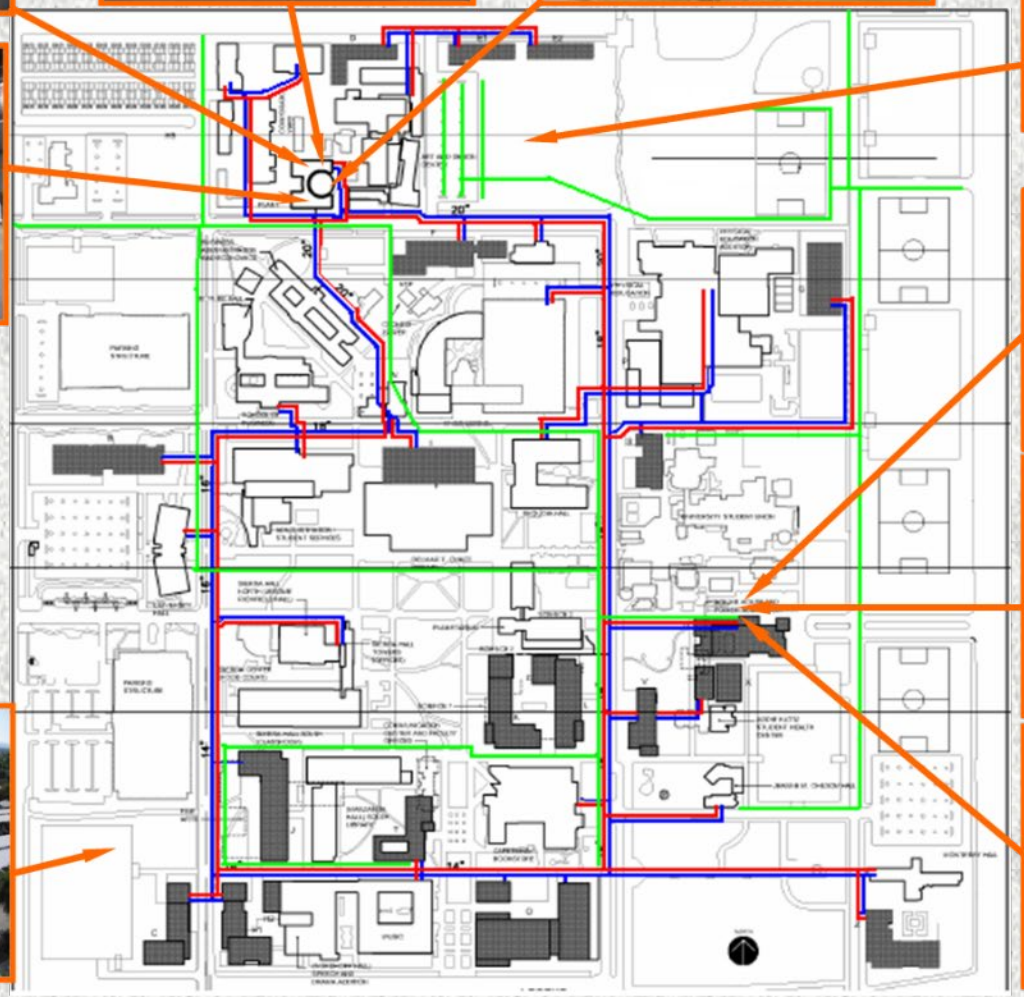
Think Globally- Act Locally

Faculty and students from AIMS² designed and delivered PPE for frontline personnel in the fight against COVID 19

California State University
Northridge
Years of Life-Changing Opportunity



Indoor and Outdoor Mobility for an Intelligent Autonomous Wheelchair

C.T. Lin, C. Euler, P.J. Wang, A. Mekhtarian, and G. Leonard
College of Engineering and Computer Science
California State University, Northridge, USA

CSUN's Online Masters Degree in Assistive Technology Engineering: https://tsengcollege.csun.edu/programs/ATE

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STEM Portal

TryEngineering & Sustainability Resources 9 October 2021

S. K. Ramesh

2016-17 IEEE Vice-President, Educational Activities

IEEE

Pre-University Education Committee

Lorena Garcia, PECC Chair
lorenagarcia@ieee.org

Burt Dicht, Director Student and Academic Education Programs
b.dicht@ieee.org

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Pre-University Education Coordinating Committee (PECC)

Mission

- Promote and enhance the level of technological literacy of pre-university educators and students,
- Be the primary source of resources, curricula and pedagogical practices for pre-university educators
- Encourage students to aspire to IEEE related careers

Powered by IEEE TRYEngineering.org

STEM Portal

TryEngineering TOGETHER

Powered by IEEE TRYEngineering Summer Institute

IEEE

TryEngineering Brand

Powered by IEEE
TRY Engineering.org

A pre-university engineering education portal for educators, students and IEEE volunteers

Powered by IEEE
TRY Engineering
Summer Institute

Two-week summer college experiences for 8th to 12th grade students to introduce them to engineering and technology

TryEngineering TOGETHER
Powered by IEEE and in2Books

A teacher-guided online learning platform that matches 3rd to 5th graders with mentors from industry

Powered by IEEE
TRY Engineering.org

STEM professionals make the world a better place!
We want all children to explore STEM career pathways and engage in STEM activities.

- Explore different STEM Fields:
  -How will you Change The World? (Flyer)
  -What Kind of Engineer are You? (Game)
  -Questioneering- Engineering Trivia (Game)
- Meet an Engineer
- Discover Accredited Engineering Programs at universities across the globe
- Explore STEM Topics: TryEngineering Tuesday (Student guides on technical topics with ability to collect digital badges)

Powered by IEEE TRY Engineering™ | STEM Portal

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Engineers are the inventors and problem solvers of the world. More than twenty five major specialties are recognized in the field of engineering.

How will *you* change the world?

BIOMEDICAL ENGINEERS

conceive and design equipment, devices, and computer systems used in medical applications.

COMPUTER ENGINEERS

create computer hardware and software found in everything from automobiles, video games, medical equipment, cell phones, satellites, and other devices

MANUFACTURING ENGINEERS

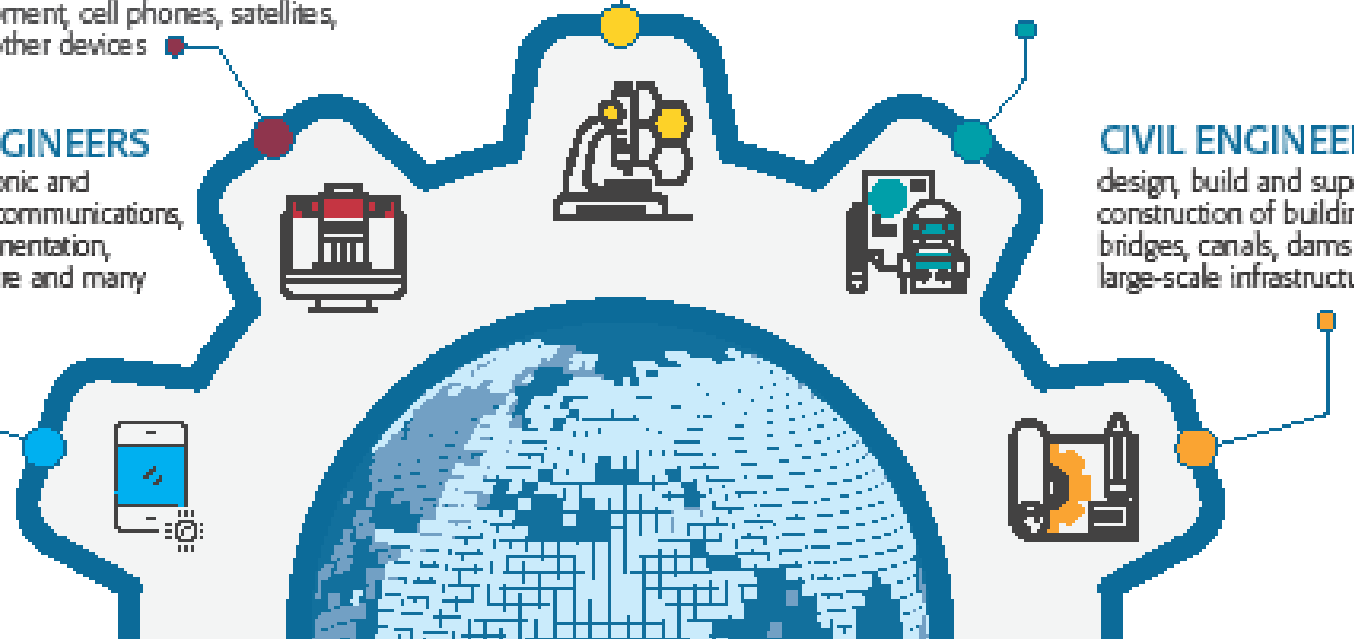
develop, design and monitor equipment, tools, and machinery used in the manufacturing process.

ELECTRICAL ENGINEERS

design electrical, electronic and computer systems for communications, energy, robotics, instrumentation, transportation, healthcare and many other industries.

CIVIL ENGINEERS

design, build and supervise the construction of buildings, roads, bridges, canals, dams and other large-scale infrastructure projects.



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AEROSPACE ENGINEERS

conceptualize, design, develop and test aircraft, spacecraft and other aerospace systems which are used in aviation, defense systems, and space exploration.

INDUSTRIAL ENGINEERS

optimize processes, systems, or organizations in order to determine the most effective ways to use the basic factors of production — people, machines, materials, information, and energy.

ENVIRONMENTAL ENGINEERS

innovate solutions to environmental problems — water and air pollution, recycling, waste disposal, and public health issues.

MECHANICAL ENGINEERS

create and develop mechanical systems that apply principles of force, energy and motion in machines and devices such as vehicles, engines, heaters and air conditioners, robots, recreational equipment and power plants.

CHEMICAL ENGINEERS

design and develop processes that involve the production of chemicals, fuel, drugs, food, and advanced materials.

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Sustainability Resources on TryEngineering

TryEngineering Tuesday Student Guides & Webinars

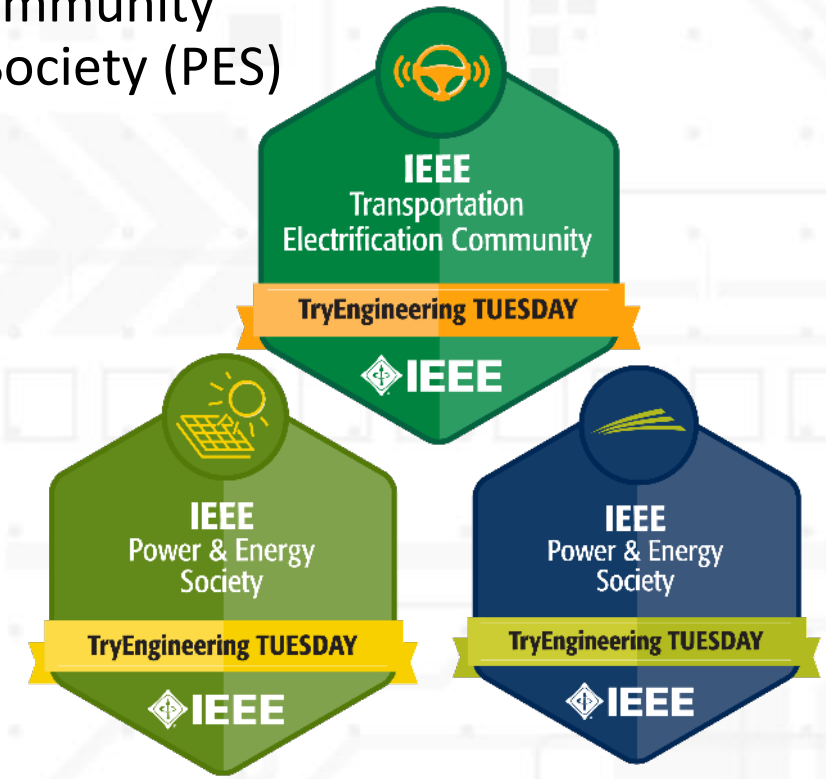
- Electric Vehicles with IEEE Transportation Electrification Community
- Solar Power and Smart Grids with IEEE Power and Energy Society (PES)

TryEngineering Lesson Plans

- TryEngineering Solar Structures Lesson
- TryEngineering Working With Wind

Games on TryEngineering

- Fidget-Power: design wind turbines that make electricity
- Sustainable Shawn: build a new eco city for stray animals



What kind of Engineer are you?

https://tryengineering.org/game/what-kind-of-engineer-are-you/

Do you want to make a difference in the world?

I CARE

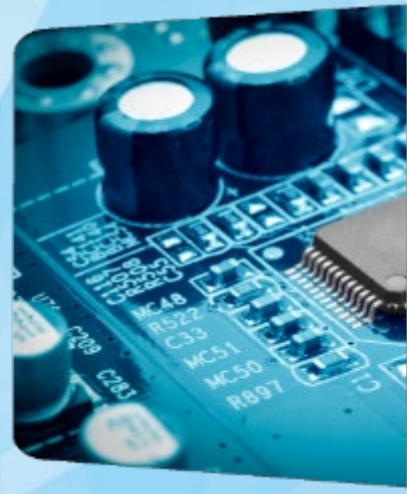
Inclusive - Collaborative, Accountable, Resilient, Ethical

IEEE

Thank You!







Questions?

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https://rameshsk.com

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Advancing Technology for Humanity