

UNIVERSITY of HOUSTON | ENGINEERING

Department of Electrical & Computer Engineering

Annual Capstone Design Conference

April 25, 2014

The Hilton UH Hotel & Conference Center

Houston, Texas

8:15 – 8:30 a	Registration Waldorf Astoria Room 210, Lobby
8:30 – 8:40 am	Opening Remarks by Dr. De La Rosa Flamingo Room 275
8:40 – 10:00 am	Technical Program – Oral Session A Flamingo Room 275
10:00 – 10:30 am	Welcoming Remarks and Addresses in Plaza Room 247 <ul style="list-style-type: none">• Dr. Dmitri Litvinov, Vice Provost, Dean of Graduate School• Dr. Joe Tedesco, Dean, College of Engineering• Dr. Badri Roysam, Chairman, ECE Department
10:30 – 10:45 am	Coffee Break, Waldorf Astoria Room 210, Lobby
10:45 – 11:25 am	Technical Program – Oral Session B, Flamingo Room 275
11:30 - 12:30 pm	Lunch, Waldorf Astoria Room 210
12:30 – 1:00 pm	Plenary Presentation “EUCLID, BIGGERS, AND SCHLUMBERGER” by Steven Gomez, Mechanical Metier Manager Schlumberger, Waldorf Astoria Room 210
1:00 – 3:00 pm	Technical Program – Poster Session, Conrad Ballroom
3:00 – 4:00 pm	Technical Program – Oral Session C Flamingo Room 275
4:00 – 4:15 pm	Coffee Break, Waldorf Astoria Room 210, Lobby
4:15 – 4:35 pm	Technical Program – Oral Session C Flamingo Room 275
5:15 – 5:45 pm	Elevator Talks by CDC Students, Waldorf Astoria Room 210
5:45 – 7:00 pm	Awards Ceremony and Alumni Mixer Reception, Waldorf Astoria Room 210

CDC 2014 Technical Program

April 25, 2014

Session A: Oral Presentations

Time: 8:40 – 10:00 am

- 8:40 - 9:00 am** **ENGINE CONTROL MODULE DIAGNOSTIC INTERFACE**
Kevin Mullet Bicol, Tin Y Liu, Vinh Thanh Phung, and Brandon David Puckett
- 9:00 – 9:20 am** **LOW POWER EQUIPMENT TRACKING SYSTEM**
Brian Minhthien Chau, Lissette Tanya Gonzalez, Paul George Walters and Dylan A. Quiroz
- 9:20 – 9:40 pm** **INSTRUMENTATION AND CONTROL OF A
MAGNETORHEOLOGICAL (MR) VALVE**
Hooks Richard Allen, Mamedov Emin Elmar, Ozyalcin Cemil Toygan, Silva Jonathan I
- 9:40 – 10:00 am** **IEEE REGION 5 ROBOTICS COMPETITION**
Ashworth Thomas, Carr Justin J, Povolotskaya Paolina, and Smitherman Stephen Ryan
- 10:00 – 10:30 am** **Welcoming Remarks and Addresses in Plaza Room 247**
- Dr. Dmitri Litvinov, Vice Provost, Dean of Graduate School
 - Dr. Joe Tedesco, Dean, College of Engineering
 - Dr. Badri Roysam, Chairman, ECE Department
- 10:30 – 10:45 am** Coffee Break, Waldorf Astoria Room 210, Lobby

Session B: Oral Presentations

Time: 10:45 – 11:25 am

- 10:45 – 11:05 am** **3D GAP MODELING SYSTEM (3D G.M.S.) FOR BLOWOUT
PREVENTERS**
Eshareturi Anthony, Guy Gavin N., Jordan Karen, and Michel Jr Andres
- 11:05 – 11:25 am** **A STRESS WAVE BASED COMMUNICATION SYSTEM FOR
CONCRETE STRUCTURES**
Cepeda Carlos V, Chirinos Jose Alonso, Cortes Silva, Felipe Sebastian and Sanchez Michael J

11:30 - 12:30 pm Lunch, Waldorf Astoria Room 210

**12:30 - 1:00 pm Plenary Presentation “EUCLID, BIGGERS, AND SCHLUMBERGER” by
Steven Gomez, Mechanical Metier Manager Schlumberger, Waldorf Astoria
Room 210**

Session C: POSTER PRESENTATIONS

Time: 1:00 – 3:00 pm

Location: Conrad Ballroom

Session D: Oral Presentations

Time: 3:00 – 4:00 pm

**3:00 - 3:20 pm CUBESAT ATTITUDE DETERMINATION AND
COMMUNICATIONS SYSTEM**
Cain Caleb Michael, McClure Jerrod Wayne, Sharar Syed, and Morales
Kenneth R.

3:20 – 3:40 pm AUTONOMOUS HEAT EXCHANGER CLEANER
Bojorquez Bustamante, Brian Couch, James M. Delany, Michael
Thomas, and Ogwo Praise D.

**3:40 – 4:00 pm REAL-TIME MEASURING SYSTEM FOR PRESSURE
EXERTED BY STRAPS IN HUMAN-MACHINE SYSTEMS**
Ryan Murphy, Ramiro Lozano, Jesús Tamez Duque, and Rebeca
Cobian.

4:00 – 4:15 pm Coffee Break, Waldorf Astoria Room 210, Lobby

Session E: Oral Presentation

Time: 4:15 – 4:35 pm

4:15 – 4:35 pm CUBE SATELLITE ANTENNA RESEARCH
Montano Jr Ramon M, Nacianceno Edgar A, Martinez Elizabeth, and
McMillin Caryn Anne

5:15 – 5:45 pm Elevator Talks by CDC Students, Waldorf Astoria Room 210

**5:45 – 7:00 pm Awards Ceremony and Alumni Mixer Reception, Waldorf Astoria Room
210**

Plenary Presentation by
Steve Gomez
Mechanical Metier Manager
Schlumberger

Euclid, Biggers, and Schlumberger

Through my eighteen year career with Schlumberger, I have been able to blend my passion for engineering and volunteering. I will share my story hoping it will inspire you to help shape the company and community you join after graduation. An excerpt from a colleague's book **The CSTEM Challenge** best captures the spirit of my story:

"Schlumberger recognizes the importance of developing individuals that will one day join the workforce in STEM fields. This is one of many reasons that you will see Steve Gomez at every CSTEM event. With his backpack and baseball cap, he might pass as a student, but do not be fooled. Gomez has degrees from MIT and Stanford and currently serves as a robotics expert at Schlumberger, the leading Oilfield Services provider.

When the staff at CSTEM starts talking about him, it is best to grab a seat because they have lots to say. While volunteering in Fort Bend Independent School District, The CSTEM staff met Steve Gomez and they hit it off immediately, bouncing ideas off of one another, brainstorming how best to get disadvantaged students interested in STEM subjects, and dreaming of ways to use all resources available to them to make an impact.

Eventually, they concluded that they should join forces and do something truly noteworthy. As Gomez said, "Alone we were doing great things, together we would reach new heights."

So in 2007, they launched the CSTEM Challenge.

Gomez is the leading inspiration behind the creative concept. His commitment to the environment combined with his passion for John Bigger's artwork, led him to suggest an expansive competition that would draw out students' diverse talents.

Gomez, an engineer, teacher, and veteran robot builder, envisioned a competition that would be about more than just constructing faster, more efficient robots. He wanted a competition that would require students to think about thinking itself; that would encourage mechanical students to bond with artistic students; that would tie together theoretical concepts and real-life applications; that would connect younger students to older students and link all students to the larger community and world.

The first CSTEM Challenge accomplished all these objectives- and more. It told a story.

The annual theme *Everyone is an Artist and an Engineer* is an open invitation to all involved to integrate both STEM and art into the fabric of life."

Since 2007 the story continues, the CSTEM Challenge has grown to International status and was honored by the White House in March 2014.

Steve Gomez



Growing up in a small, South Texas town, I played third base for my high school baseball team and helped them to back-to-back AAA state championships. I learned to hit a 90 mph fastball, but never really could hit the curve ball, so following high school I ventured off to Massachusetts Institute of Technology. After one college game in the snow, I retired from baseball and began to pursue my interests in robotics and education. Formally, I studied Mechanical Engineering, but grew more interested in technology and learning. Through M.I.T., I volunteered at the first Computer Clubhouse, of which there are now 90 around the world. Upon graduation, I decided to try a warmer climate and attended Stanford University for my master's degree with a focus on Robotics and Control. There, I attempted to launch one of the early LEGO RCX bricks into space, but unfortunately, my payload did not make the final cut.

With my formal education complete, I decided to return home and began working for Schlumberger. As an engineer, I helped design an innovative directional drilling tool. I then became a product development manager. My love for learning and sharing continues and I have volunteered with numerous organizations in Houston and abroad including, Hightower High School, YES College Prep, Carnegie Vanguard High School, Project Row Houses, Marshall High School, and Schlumberger Seed in Mexico and Egypt. I am currently a member of Houston's HISD 21st Century Advisory Committee which will shape education for area K-12 students for the next 100 years!

My wife and I are raising two great kids and we enjoy, tennis, our Jack Russell Terriers, collecting art, and solving the Rubik's cube.