IEEE Berkshire Section Newsletter

Update: December 2016

STEM Research Challenge - 2017

Papers Due – March 10, 2017

IEEE Berkshire Section

HIGH SCHOOL

STEM Research Challenge - 2017

Papers Due – March 10, 2017

AWARDS:

Awards will be made in two divisions; grades 9–10, and grades 11–12.
Each division will be eligible for the following prizes:

FIRST: $600, SECOND: $400, THIRD: $200

Winning authors are invited with their parents and teacher to the May 11th IEEE Annual Meeting to comment on their papers.

An *Honorable Mention* will be awarded to the student with the best qualifying paper in each participating school division with no prize awarded.

For additional information, e-mail: Berkshires@ieee.org

Contest Contact: **Jill McKennon, Education Chair**

Life Member Affinity Group Luncheon Meeting:

December 2016

Electromagnetic Simulation Supporting Aircraft Certification

(Recorded Webinar)

by

Dr. Marco Kunze & **Dr. David Johns**

Computer Simulation Technology (CST)

Electromagnetic environments, such as those produced by lightning, can cause failures on aircraft safe operation and even catastrophic effects if precautions are not taken. The risk is elevated for modern aircraft because they have an increased number of flight control, communication and guidance systems, and incorporating structures made of carbon-fiber composite (CFC).

Aircraft certification by testing with respect to different electromagnetic environments is both costly and time consuming. Today, electromagnetic (EM) field simulation offers the possibility to predict vulnerabilities to electromagnetic environments early in the design process and reduces the number of tests required for certification. Simulation may be used to assess the impact of changing a component at a later time in the product life cycle. As such EM simulation is ideally suited to complement testing.

In this webinar the application of CST STUDIO SUITE® to simulate aircraft exposed to various electromagnetic environments was presented. The discussion was provided of the use of CST EM STUDIO® for lightning attachment zoning characterization and CST CABLE STUDIO® for indirect lightning effect analysis including coupling into cable harness systems.

Meeting contacts: Bert Pritchard, Life Member Affinity Group Chair
Guest Attendance: 4
IEEE Member Attendance: 7

2017 Berkshire Section Officers Nominations:

November 2016

The nominating committee has proposed the following slate for the 2017 Berkshire Section Officers:

Section Chair	**Rich Kolodziejczyk**
Section Vice Chair	**Jim McVeigh**
Treasurer	**Roger Manzolini**
Secretary	**Dave Rueger**

Anyone wishing to submit a member for one of the offices should submit the name along with a letter indicating willingness to serve and endorsements of ten current members.
Send the nomination and endorsements no later than December 8, 2016 to the nominating committee at:

David Rueger, Secretary
IEEE BERKSHIRE SECTION
172 Orchard Road, Dalton, MA 01226.

NOMINATING COMMITTEE: GEORGE HAUS, BERT PRITCHARD, GEORGE GELA, and JILL MCKENNON.

David Rueger

Secretary
IEEE Berkshire Section

Computer and Control Chapter (C&C) Meeting:

November 3, 2016

Data Storage

From Tradition Hard Drives to Flash Memory – The many ways to store data.

by
Michael Glaberman
MSG Computers + Genesis10

If you own a Computer, Cell Phone, or another form of Technology that relies on communication, chances are you are generating Bytes, Mega-Bytes, Gigabytes, or Terabytes of Data! This data can come in the form of communication, logs, reports, files, or any other number of technology related items. Regardless of its origin, this data has to be stored somewhere and somehow. This presentation targeted the different types of Data Storage Devices and the hardware/infrastructure needed to host them.

Meeting contacts: Richard Kolodziejczyk, P.E.
Guest Attendance: 6
IEEE Member Attendance: 9

Rich Kolodziejczyk, Computer & Control Chapter Chair opens the meeting and introduces the speaker: **Michael Glaberman**

Michael Glaberman explains Data Storage fundamentals

Michal is presented with a gift on behalf of the IEEE Berkshire Section

Power Chapter Dinner Meeting: October 20, 2016

NET ZERO RESIDENCE

Presented by
Roger Manzolini

A new threshold for residential building surpassing the goal of low energy use, is now net-zero energy. Net Zero energy homes seek to produce as much energy as they consume, using smart designs that incorporate renewable energy sources.

In a nation where buildings contribute a substantial portion of the country's total fossil fuel consumption, the interest in net zero construction is increasing enormously. Consumers are looking for ways to improve the energy efficiency and long-term savings in their home.

This presentation provided a look at one example of a net zero energy design made possible by today's modern construction techniques.

Meeting contacts: David Rueger
Guest Attendance: 9
IEEE Member Attendance: 15

David Rueger, Power Chapter Chair opens the meeting and introduces the speaker:
Roger Manzolini

Roger Manzolini explains his topics of his presentation

Roger continues his presentation while the members and guests listen intently

Roger explains the meeting of Net Zero energy home

Roger is presented with a gift from Dave Rueger on behalf of the IEEE Berkshire Section

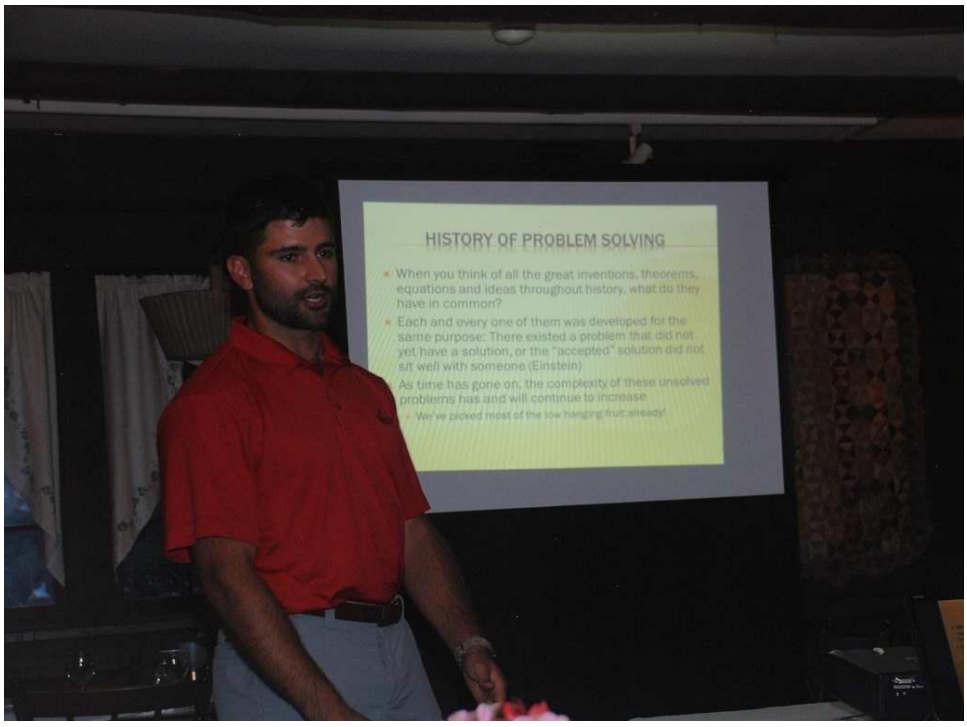
Computer and Control Chapter Dinner Meeting:
August 11, 2016

High Performance GPU Computing
By
Justin McKennon, Senior Electrical Engineer, NTS Lightning Technologies

In today's world, it's nearly impossible to imagine life without computers. They have become so delicately intertwined with every facet of our day to day lives. Computers have enabled us to solve problems that without them would be nearly unsolvable. However, as the complexity of these problems increase, so do the performance demands on computers. Until recently, it was commonplace for CPU manufacturers to simply add more transistors and increase the clock frequency of the CPU to increase performance. This approach however is not sustainable. We're very nearly at the feasible limit for clock speeds, yet the never ending demands for increased performance exist. This has forced the computing industry to turn to alternative means to solve problems. This talk focused on one of the most hotly researched areas in computers today: Graphics cards. GPU-accelerated computing is the use of a graphics processing unit (GPU). Since their inception, many of us have been wholly unaware that sitting inside this little card that makes your PC games run is actually a programmable supercomputer. If used properly, these can provide tremendous performance increases for a wide variety of problems.

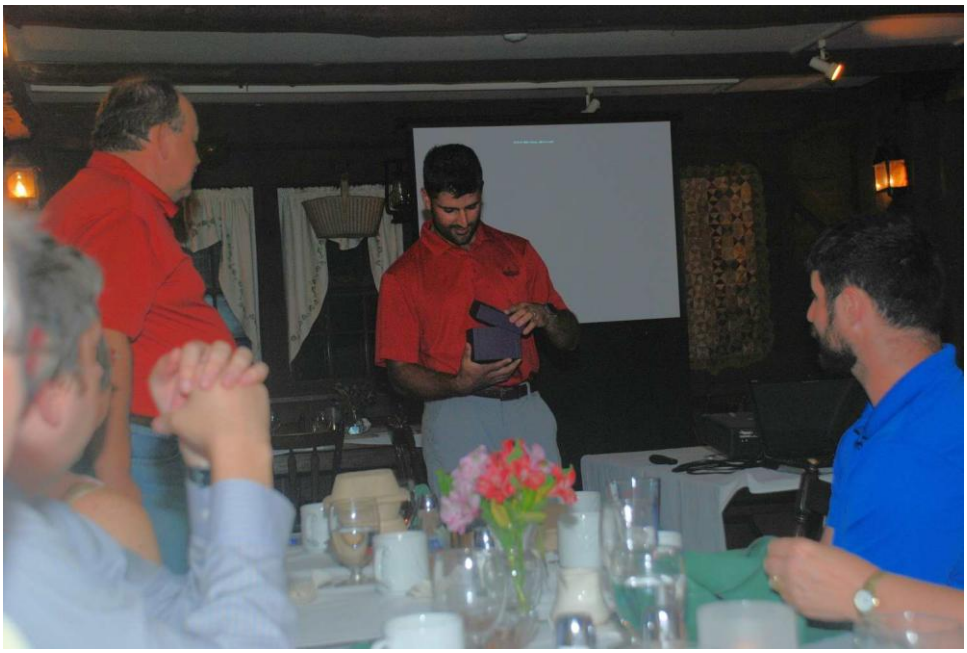
Meeting contacts: Richard Kolodziejczyk, P.E.
Guest Attendance: 11
IEEE Member Attendance: 14

Speaker: Justin McKennon presenting on the High Performance GPU Computing



Justin on History of Problem Solving

Justin McKennon making a point on GPU challenges



Justin receiving a gift from the Berkshire Section

Life Member Affinity Group Presented Annual Dinner Meeting: May 18, 2016

2016 IEEE Berkshire Section STEM Research Challenge

Presentations by Research Challenge Winners

We recognized this year's winners by giving the students a few minutes to talk about their project: how they chose their topic, their research, and any interesting discoveries.

Grades 9/10 prizes: (1st - $500, 2nd - $250, 3rd - $100)

1st - Vivian Hou - Grade 10, Miss Halls' School: "The Discovery of an Ostrich-like Dinosaur Strengthened the Theory of the Dinosaurian Origin of Birds"

2nd - Kelsey Brown – Grade 10, Miss Halls' School: "The Discovery of and Research Behind Homo Naledi"

3rd - Benjamin I. H. Zoeller – Grade 10, Monument Mountain Regional High School: "The Ravaging of the Roach: An Overstepping of the Human Mind"

Grades 11/12 prizes: (1st - $500, 2nd - $250, 3rd - $100)

1st – Janet Zhao – Grade 11, Miss Hall's School: "Genes and Alzheimer's"

2nd – Asa Mervis – Grade 11, Monument Mountain Regional High School: ""Superman" Memory Crystal: The Eternal Vessel for Human Knowledge"

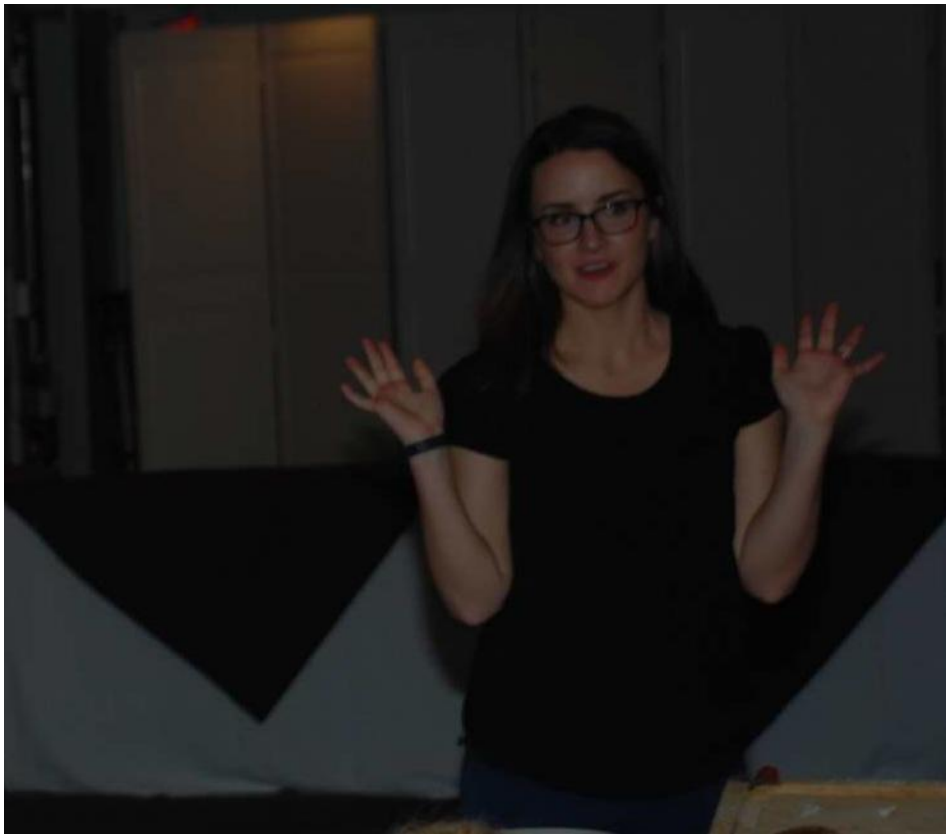
3rd – Sally Nason – Grade 11, Miss Hall's School: "Autism Reversal Using Shank3 Gene"

From Award Chairman:

James F. McVeigh our Chairman, announced the list of winners of the Member Child Awards for 2016 Member Child Awards $100: Holly Rueger

The recipient of the Bernie Clairmont Memorial Fund 2016 award is Shelby Allen of Adams, MA. She will be going to Mount Holyoke College for the Computer Science.

Meeting contacts: Jill McKennon, Education Chair
Guest Attendance: 13
IEEE Member Attendance: 11



Jill McKennon, Education Chair, opens the meeting and introduces the 2016 IEEE Berkshire Section STEM Research Challenge Winners

1st – Janet Zhao – Grade 11, Miss Hall's School: "Genes and Alzheimer's"

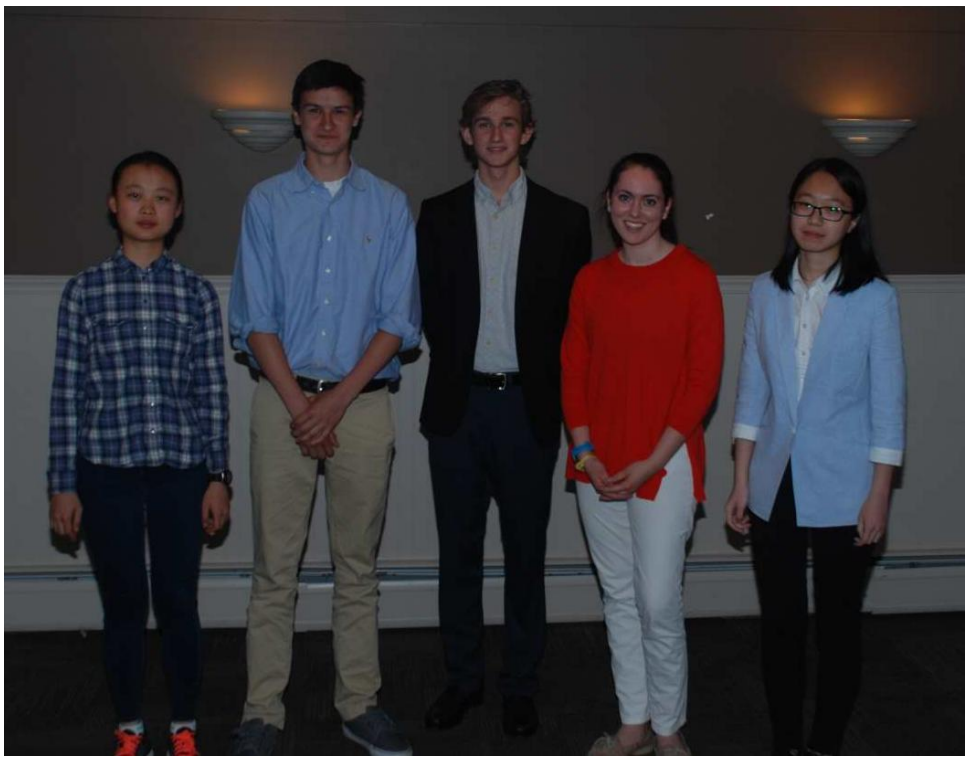
2nd – Asa Mervis – Grade 11, Monument Mountain Regional High School: ““Superman” Memory Crystal: The Eternal Vessel for Human Knowledge”

(Not Present)

3rd – Sally Nason – Grade 11, Miss Hall's School: “Autism Reversal Using Shank3 Gene”

1st - Vivian Hou - Grade 10, Miss Halls' School: "The Discovery of an Ostrich-like Dinosaur Strengthened the Theory of the Dinosaurian Origin of Birds"

2nd - Kelsey Brown – Grade 10, Miss Halls' School: "The Discovery of and Research Behind Homo Naledi"



From L to R: Vivian Hou, Benjamin Zoeller, Asa Mervis, Kelsey Brown, and Janet Zhao.
Not Present: Sally Nason

Berkshire Consultants Network Dinner Meeting: May 5, 2016

Berkshire Innovation Center

By
Rod Jané, Project Director

Rod Jané, Project Director, provided an overview of the Berkshire Innovation Center (BIC) - a 20,000 sq. ft. facility to be constructed at the William Stanley Business Park in Pittsfield, MA. This exciting project is the result of a $9.7 million capital grant from the Massachusetts Life Sciences Center to the City of Pittsfield. The mission of the BIC is to "provide a catalyst to enable and accelerate innovation and growth of existing companies in the Berkshire Region – primarily small to medium sized manufacturing companies (SME's) in life sciences, the life sciences supply chain, advanced manufacturing & technology with the ultimate objective of spurring economic growth, job creation, and investment in the region.

Meeting contacts: Richard Kolodziejczyk, P.E.
Guest Attendance: 13
IEEE Member Attendance: 13

Rich Kolodziejczyk, Consultants Network Chair, opens the meeting and introduces the speaker: Rod Jané

The Speaker: Rod Jané presenting the Berkshire Innovation Center project

Facility plan for BIC at the William Stanley Business Park in Pittsfield, MA.

Audience: The Berkshire Section Members

Rich Kolodziejczyk presents Rod Jané with a gift from the Berkshire Section

Power Chapter Dinner Meeting: March 31, 2016

Electric Power Systems – the Old, the Modern, and the Future

By
Dr. George Gela
Berkshire Electric Consulting Company

Electric power systems have been with us for more than a century, and have evolved significantly over the years. First was the "war of the currents" between ac and dc, then unprecedented growth of ac power systems worldwide, then a slowdown. Because electric power cannot be stored (or, rather, we have yet not found efficient methods of storing it), electric power has to be consumed as soon as it is produced, and produced just as it is needed. For many decades, the goal was to balance demand versus supply to maintain system stability, frequency, and voltage at the customer's end. Now, we see local alternative generation sources and storage system that are tugging the supply-demand picture in various directions, development of localized and large-scale electric energy storage technologies, and re-introduction of dc power systems, not to mention continued increase in voltage levels, capabilities and efficiencies of ac power system. Where is this leading us?

This talk looked at the origins, history and established trends on electric power system, successes that have been achieved, mistakes that have been made, power outages that we lived through, emerging technologies, strategies and materials, demands and technologies that will help drive the future, and new challenges that we will successfully meet.

Meeting contacts: David Rueger, Power Chapter Chair
Guest Attendance: 9
IEEE Member Attendance: 16

David Rueger, Power Chapter Chair opens the meeting and introduces the speaker: Dr. George Gela

The Speaker: Dr. George Gela presenting

George describes “Where are we today”

George is presented with a gift from Dave Rueger on behalf of the IEEE Berkshire Section

Berkshire Consultants Network Presented National Engineers Week Dinner Meeting:

PE Licensure for Engineers

By
John J. Burke, Ph.D., P.E.

One of the most important decisions one can make early in an engineering career is to enter a professional path and plan to become licensed as a professional engineer (P.E.). The licensure of professional engineers is important to the public because of the significant role engineering plays in society. The profession regulates itself, through the licensing boards, by setting high standards for professional engineers. These high standards help protect the public by requiring that professional engineers demonstrate their competence to practice in a manner that will safeguard the public's safety and welfare.

Dr. Burke presented a brief history of engineering licensure. The focus of the presentation was the transition to what is a licensed professional engineer, the benefits of obtaining an engineering licensure, and how to become licensed. The four steps required to obtain engineering licensure were explained. The two required exams in the engineering licensure process were outlined. The first exam in the licensure process is the Fundamentals of Engineering or FE exam. The format of the FE was introduced and strategies for passing were presented. The second exam in the licensure process is the Principles and Practice of Engineering or PE exam. The format of this exam was introduced and explained. Lastly, alternative paths to licensure were explored.

Meeting contacts: Rich Kolodziejczyk, P.E.
Guest Attendance: 9
IEEE Member Attendance: 14

Rich Kolodziejczyk, Consultants Network Chair, opens the meeting and introduces the speaker: John J. Burke

The Speaker: John J. Burke presenting

The Berkshire Section Members

Berkshire Section Members at the Speaker table

The Berkshire Section Members (cont.)

Rich Kolodziejczyk presents John Burke with a gift from the Berkshire Section