



Update and Reminder for Tutorial on Transformers

Kieth H. Sueker, PE



The course will cover specification and utilization of transformers, with the focus being on units applied for drive isolation, converters, rectifiers, power supplies, high frequency applications and similar uses. Both the theoretical and practical aspects of these transformers will be presented, including such matters as leakage reactance, harmonic loading, "K" Factor and characteristics of multi-winding units. The course material will cover oil insulated, dry-type and water-cooled designs. The tutorial is intended to supplement the education of younger engineers who were not exposed to transformers in their college coursework and to provide an update for more senior engineers. A bound volume of the material presented is included.

The course is now confirmed and reservations are continuing to come in for this joint IAS/PES tutorial. The location has changed to Washington Group, Westinghouse Energy Center, Monroeville since it was published in the September Bulletin. Reservations for this tutorial are requested by Sept 26th, but late registrations will be accepted on a space available basis. Please note that this is an updated tutorial originally presented in 1999 that was well attended. The presenter has a wealth of technical and practical knowledge from his experiences in unique industrial design applications.

Place: Washington Group, Westinghouse Energy Center NOTE: THIS IS NEW LOCATION
Monroeville
Date: October 9th and 16th
Social: 6:30 PM with complimentary soft drinks
Program: 7:00 – 9:00 PM

Registration for the tutorial is requested by Sept 26th. The fee will be:

IEEE Members	\$50.00
Non-members	\$75.00
Students	\$25.00

For more information or to register contact John Momyer at (724) 864-6777 or john.momyer@crispcontrol.com. Please make registration checks payable to IEEE Pittsburgh Section and mail to John Momyer, 200 Productivity Place, Irwin PA 15642.

Geometry in Signal Processing

Dr. Steven Smith, Advanced Sensor Techniques Group
MIT Lincoln Laboratory



Geometric concepts and invariance theory are central to understanding and solving a range of fundamental problems in signal processing, including filtering, detection, and estimation. This seminar interprets each of these subjects using insights from differential geometry and Lie theory. The solution to several specific problems explicitly using these concepts is described. Subspace estimation accuracy bounds are derived from an intrinsic treatment of the Cramér-Rao bound and compared to the subspace accuracy achieved by standard singular-value decomposition methods. In detection theory, the concept of fiber integration is used to establish closed-form performance predictions for constant false alarm rate (CFAR) detectors employing both mean and variance normalization, such as the deflection ratio. In filtering theory, geometric optimization methods are applied to the problem of computing time-varying adaptive weights; the problem of space-time adaptive processing (STAP) for a rotating phased array is considered explicitly. Other areas of signal processing in which the application of similar geometric ideas may be useful are discussed.

Place: Benedum Engineering Hall, Room 426
University of Pittsburgh, Dept. of Electrical Engineering
Date: October 22nd
Program: 12:00 – 1:00 PM

For more information, please contact Professor Pat Loughlin at (412) 624-9685 or pat@ee.pitt.edu.



The Negative Effect of Technology on Human Speech

Dr. Richard A. Thompson, Telecommunications Program
University of Pittsburgh

Human audio communication has become more-and-more degraded as we have added more-and-more technology to our speech paths. This long talk describes this effect in great detail. First, human speech is thoroughly discussed: physiologically, spectrally, and cognitively. Then, the detrimental effects of analog and digital telephony are described. While net signal-to-noise ratio has improved, the decreased fidelity and increased delay is quantified and illustrated, and the cognitive effect is explained. Finally, modern technology for speech compression and Voice over IP are discussed. While commercial VoIP may have lower quality, especially over the Internet, this is shown to be an implementation issue. VoIP is shown to present an opportunity to recover much of the speech quality that has been lost over the years.

Place: 501 IS Building
135 N. Bellefield Ave, Pittsburgh, PA 15213
Date: October 3rd
Program: 2:00 – 5:00 PM

Dr. Thompson is a Professor of Telecommunications at Pitt, and is director of Pitt's well-known Telecom Program. He has been at Pitt for 14 years, after 20 years at "the old" Bell Telephone Laboratories. "Dr. T." is a Senior Member of the IEEE and a former Chapter Chair for the Pittsburgh Section.

If you have any questions, or need more information, please contact Prashant Krishnamurthy at (412) 624-5144, or by e-mail at prashant@tele.pitt.edu.

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Seminar on Solid State Starters

Harry Hagerty, P.E.



The seminar will focus on the theory and operation of solid-state starters for AC motor starting. Topics include AC motors basic overview, reduced voltage starting methods, solid state starters theory of operation, solid state medium voltage starters 7.2kV and 15kV class, power systems analysis for motor starting, voltage regulation and power systems circuit simulation, solid state starter control technology for Kw/torque control, synchronous motor positioning and reactive power compensation. A bound volume of the material presented is included.

The IAS and PES chapters of the Pittsburgh section sponsor this two-day seminar. The seminar is designed to cover four hours of presentation over two nights with time for questions and answers. Continuing education units of 0.5 units will be granted for completion of both sessions. The presenter has over 15 years design experience with solid-state motor starters.

Place: Benshaw Inc (412) 487-8235
1659 E. Sutter Road, Glenshaw, PA 15116
Date: October 30th and November 6th
Social: 6:30 PM with complimentary soft drinks
Program: 7:00 - 9:00 PM

Registration for the tutorial is required by October 23rd. The fee will be:

IEEE Members \$50.00
Non-members \$75.00
Students \$25.00

Directions: From downtown Pittsburgh, follow Route 28N to Route 8N towards Butler. Continue north on Route 8 for 4 to 5 miles (8 red lights). Look for the Giant Eagle Supermarket and Annette Ganassi GM dealership. Turn left turn at the red light across from Giant Eagle onto Butler Plank Road. Make the first right off Butler Plank road (Large Blue building will be on the right) onto East Sutter Road. Benshaw is the third building on the left next to Skateland.

For more information, or to register, please contact Harry Hagerty at (412) 492-0943 x226 or hhagerty@benshaw.com. Please make registration checks payable to "IEEE Pittsburgh Section" and mail to Harry Hagerty, 1659 E. Sutter Road, Glenshaw PA 15116.



Grassroots Lobbying By and For Engineers

Russell T. Harrison

**Legislative Representative - Grassroots Affairs
IEEE-USA Office, Washington, DC**

Whether they know it or not, all Engineers in the USA are affected by government policies. From their first day in school right through retirement, engineers are directly, and profoundly, impacted by decisions made in Washington D.C. – decisions made by people who don't understand what you do nor what you need to do it.

Studies have repeatedly demonstrated that grassroots communication between voters and their elected officials are the most effective way to influence decision making in Washington. Organizations such as the American Medical Association and the Association of Trial Lawyers of America know this, which is why they are among the most powerful professional associations in Washington.

Yet most Americans never contact their Members of Congress. For engineers, such inaction can be deadly as needed grants and research projects go to less deserving, but more active, groups.

The IEEE, through its American division, IEEE-USA, is working to organize and mobilize its members. Over the past few years, members of IEEE have successfully convinced Congress to enact legislation that positively affects every engineer in the country. Find out about this program, and about simple ways that you can protect your own future by being a successful grassroots lobbyist.

Place: Engineering Auditorium, Adjacent to Benedum Engineering Hall
University of Pittsburgh
Date: October 27th
Program: 12:00 – 1:00 PM

Note: No meal associated with this meeting – No Charge for the Meeting.

Reservations Required by Tuesday October 21, 2003

For more information, or to make your reservation, please contact Joe Kalasky at (724) 838-6492 or j.kalasky@ieee.org. Joe is the Pittsburgh Section PACE (Professional Activities Committees for Engineers) Chair, and IEEE Industry Relations Chair.

Join the lobbying efforts for IEEE Members now!

2003-2004 Pittsburgh Section IEEE Program Calendar

Group/Society	September	October	November	December	January	February	March	April	May
ExecCom Harry Hagerty (412) 487-8235	20 South Park	16 WVU	20 Point Park	18 Point Park	15 Point Park	19 Point Park	17 Point Park	15 Point Park	20 Point Park
Section Mtngs Harry Hagerty (412) 487-8235	20 Fall Picnic	10 Student Tour at Respiroics				Engineer's Week - Robot Car Race			
Upper Mon Matt Valenti									
Industry Application Kal Sen (724) 696-1611	11 Model. & Simul. of Fuel Cell	9 & 16 Transformer Tutorial	6 Solid State Starter Tutorial		8 Intellec. Prop. 22 Trans. K-Factor	5 Power Fact/Harmonics 19 Career Dev.	4 Power System Simulation		
Magnetics Miklos Gyimesi (412) 268-2308									
Computer Gerry Kumnik (412) 487-1430									
Communication Prashant Krishnamurthy (412) 624-5144		3 Negative Effect of Technology on Speech							
Power Eng. Kal Sen (724) 696-1611	11 Model. & Simul. of Fuel Cell	9/16 Transform. Tutorial			8 Intellec. Prop. 22 Trans. K-Factor	5 Power Fact/Harmonics 19 Career Dev.	4 Power System Simulation		
PACE Joe Kalasky (724) 838-6492		27 Grassroots Lobbying							
Signal Processing Patrick Loughlin (412) 624-9685		22 Geometry in Signal Processing							

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