## December 2018

*(Entries are Hyperlinked: point+ctrl+click)*

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<td><strong>Life Member Tour</strong></td>
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Membership in the Following Counties

**Pennsylvania:** Bucks, Chester, Delaware, Montgomery and Philadelphia.

**New Jersey:** Burlington, Camden and Gloucester
MESSAGE FROM THE CHAIR

Peter Silverberg, IEEE, LSM, P.E.

I have been promoted! After two years as your Chair, I am moving up to the exalted position of Past Chair. Starting next month this space will be authored by Emilio Salgueiro. He is taking over as Chair. He was Chair in 2011 and more recently Region 2 Secretary, so he knows the duties of office. The rest of the officers elected are Mark Soffa, Vice Chair; Robert Johnston, Treasurer; and Jeff Gingerich, Secretary. Big problem – barely 2% of the membership voted. We need more interest and more competition than we are getting.

I was asked a great question. What does ADCOM do? First of all, it meets every month except July and August on the second Tuesday at the Sheraton University City. Any member who wants to observe can call the office and reserve a place. Why are we meeting? A prime
function is to allocate money according to our budget to run the section activities. This means coordination of the many chapters and committees. Also, ADCOM is the conduit to the region and MGA who set the general rules we observe. Probably the most important thing we did was hire the wonderful office that takes care of many administrative details daily. It would be great to have more members interested in ADCOM. ADCOM needs a youth movement. Coming to Center City after work can be annoying, but the rewards to you for volunteering are incalculable.

Milestones are of interest to the IEEE. Kate McDevitt and Emilio Salgueiro have been working on locating one honoring Admiral Grace Hopper, the inventor of COBOL. A place for the plaque has been found. It will be at the Mathematics Civic and Science Charter School, 447 North Broad Street, Philadelphia. Mark down April 6 as the projected date for dedication.

IEEE conferences plan far into the future. The Section will assist in one many years from now. Namely: 2026 IEEE IAS Petroleum and Chemical Industry Committee Technical Conference (PCIC) Sept, 21-24, 2026

January weather may be lousy but there are three interesting events. Jan 3 – Life Members and PSPE tour Southeast Wastewater Treatment Plant. Judging for Future City takes place Jan. 19 (volunteer judges needed, ask me how to become one). IEEE Night returns January 22 with two technical presentations.

My closing words to you are simple: Happy Holidays, Merry Christmas and Happy New Year.

IEEE Philadelphia Section Receives an Award
2018 Membership Recruitment and Retention Performance

Membership Development goals are created for each Section for both recruitment and retention.

Each Section has a unique goal based on different dynamics – whether the Section has had growth or decline, as well as the overall size and location of the Section.
Delaware Valley Science Fairs (DVSF)

DVSF Information

Founded in 1949, The Delaware Valley Science Fairs, Inc., is a non-profit organization sponsored by area companies, foundations, universities and individual donors. One of the oldest and largest Fairs in the country, DVSF embraces a philosophy that students learn science by doing science. In the process, students learn how to think and develop critical problem-solving skills that they will need for careers, college and citizenship. Our mission is to bring parents, teachers and industry together to stimulate and nurture young people so that they can grow and develop into contributing members of the community by providing the scientific work force needed for the future. We provide mentoring and teacher training to facilitate participation in this activity.

Learn More About Volunteering for DVSF

Call for Nominations-2019 Engineer of the Year

Kickoff event – Thursday, February 14

Young Engineers Social – Tuesday, February 19

Nominations must be submitted by one of the technical and professional societies in the Delaware Valley by Friday, October 20, 2018.

Click here for more information on 2019 Engineer of the Year Nominations

Call for Nominations – 2019 Young Engineer of the Year

Do you know an outstanding young engineer deserving of recognition? Then YOU are invited to submit nominees for the 2019 Young Engineer of the Year (YEOY) Award.

Click here for more information on 2019 Young Engineer of the Year Nominations
It’s that time of year again. I can’t believe it’s October already! The school year is off to a great start for the Future City Competition. To date, 49 schools have signed up and have started designing their cities of the future.

The Philadelphia Regional Future City Competition is in urgent need of mentors and needs your help! If you have any time available to share your experience with students who are learning about what engineers and planners do, please consider volunteering!

The Future City Competition is a project-based learning program for 6th through 8th grade students around country that introduces them to the principles of engineering while allowing them to use teamwork and creativity to solve problems that face the world. The program helps advance STEM learning in Middle Schools in our region and encourages students to consider careers in engineering in the future. In recent years the regional competition has grown to include over 500 participating students and teachers in the Philadelphia area, but we are short on volunteer mentors. This is a great way to give back to the community and share your experience with the next generation of engineers!

Please consider volunteering as a mentor! Here is some helpful information:

1. **What is a Mentor?** – A Future City Mentor is a volunteer who is an engineer, planner or student who shares their experience, advice, guidance, and technical assistance to a group of students who are working towards completing the competition deliverables (SimCity virtual city, essay, model construction, and presentation). For more information about your role as a mentor go to: [https://futurecity.org/participants/mentors](https://futurecity.org/participants/mentors).

2. **Where are Mentors Needed?** - Mentors are needed at Middle Schools throughout the Greater Philadelphia region. Currently, the following schools are in need of mentors:
   - Agora Cyber Charter School - Phoenixville, PA
   - Centennial School District - Southampton, PA
   - Charles Boehm Middle School - Yardley, PA

Email Address:

volunteer@futurecityphilly.org
3. **Time Commitment** - The schools in need of mentors could use any help you can offer! There are plenty of ways to help, including meeting with the class in person, using technology such as Skype or GoToMeeting for virtual meetings, or corresponding via email. Normally, the teachers could use help every other week for the first month or two, then more frequently as the deadlines approach.

4. **Schedule** – Mentors are needed as soon as possible, as these schools are already working towards their first deliverables in mid-December. The competition is held on January 19, 2019 at Archbishop Carroll High School in Radnor, PA. Mentors are assigned on a first-come, first-served basis. Please let us know if you have a preference.

5. **Spread the Word** – These schools are in desperate need of help from engineers and planners! Please share this email with friends/coworkers who may interested. And please feel free to partner up with a colleague, coworker, or friend to work as a team in serving as co-mentors.

- Elizabethtown Area School - Elizabethtown, PA
- ET Richardson Middle School - Springfield, PA
- Fleetwood Area Middle School - Fleetwood, PA
- Gwynedd Mercy Academy Elementary School - Spring House, PA
- Little Town Christian Robotics Academy - Chester, PA
- Maria Kaupas Academy - Scranton, PA
- Mill Creek Elementary - Warrington, PA
- Mother Teresa Regional Catholic - King of Prussia, PA
- Mount Aviat Academy - Childs, MD
- New Hope Solebury Middle School - New Hope, PA
- St. Albert the Great School - Huntington Valley, PA
- St. Elizabeth Parish School - Uwchlan, PA
- St. Mary Interparochial School - Philadelphia, PA
- St. Peter's School - Philadelphia, PA
For more information on mentoring, please contact: Mike McAtee at:

mjmcatee@urbanengineers.com.

There are also volunteer opportunities on the day of the competition (January 19, 2019), including special awards evaluator, preliminary judge, and general volunteer. We also have a need for volunteers in advance of the competition, including virtual city judge and city essay judge. If you are interested in getting involved, please sign up at:

http://www.futurecityphilly.org/fcvollops.html

Any questions please contact me via e-mail or phone. Please feel free to forward this e-mail to your friends, co-workers, and technical society members.

Karen R. McManuels, PE
Philadelphia Regional Volunteer Coordinator
kmcmanuels@aeceng.net
610-688-3980 x132

Check Out Last Year’s Winner

2018 Queen of Angels
- 2nd Place: Downingtown Middle School
- 3rd Place: Lionville Middle School

Honorable Mention:
- St Andrew School
- Mount Aviat Academy
- Grey Nun Academy

People's Choice:
- Drexel Middle School
iPraxis

THE POWER OF VOLUNTEERING!

Through in-class mentoring, project-based learning, science fairs, and after-school programs, our iPraxis volunteers (Scienteers) help to increase knowledge and understanding of STEM subjects and the opportunities they provide.

iPraxis works to inspire middle school aged students in underserved Philadelphia communities to explore science, technology, engineering, and mathematics (STEM) by connecting them with professional scientists and providing hands-on learning experiences.

Our commitment to STEM education is the foundation of our programs and initiatives. We believe all students, regardless of their backgrounds, should be given the opportunity to learn how to investigate, problem solve, and create by putting their ideas into action. iPraxis brings together experts and students to explore how STEM is fundamental to everyday living and our future well-being -- from protecting the environment to curing illnesses.

iPraxis relies on volunteer STEM professionals and students, on donors and supporters, and on teachers, parents, and students to fulfill its mission.

iPraxis Website

iPraxis Newsletter
IEEE WIE REPORT 2018

IEEE Women in Engineering Affinity Group of the IEEE Philadelphia Section

Tuesday, November 13, 2018

Report:

- Budget for 2018
  - Two WIE Members request help with attendance to IEEE WIE Forum in West Chester, New York:
- Grace Hopper milestone found a location:
  - Mathematics Civic and Science Charter School
  - MCSCS Ms. Veronica Joyner – The Ceremony will be held Saturday, April 6, 2019. The plaque will be placed in the cement in the side walk in front of the school.
  - The location for the celebration will be announced early next year.
- YP/WIE RISE Program October 6, 2018 feedback was good.
- Spring Penn State Speaker Series – Spring 2019
- Summer STEM program 2019
- The new WIE officers for 2019 are as follows:
  - WIE Chair: Maria Tabbut
  - WIE Vice Chair: Nannett D’ Imperio
  - WIE Treasurer: Robert Johnston
  - WIE Co- secretaries: Janine McCartney and Megan Hegcock
- Meetings for 2019 will be announced in January

Membership: Please remind all board members to join Women In Engineering (WIE). It will truly help our numbers. It does not cost life members and its $25 for regular member.
Tower Above the Competition!
Test your steady hand and sense of balance by playing Giant Jenga with your friends in the design and construction industry! Just like the tabletop game only super-sized. The tallest tower winner gets bragging rights.

The winner of the tournament will also have the opportunity to name an ACE Scholarship - which will be presented at the 18th Annual ACE Scholarship Breakfast on Thursday, May 23, 2019.

Proceeds from our Giant Jenga Tournament will go to scholarships for our current High School students - AND - ACE Alumni currently enrolled in school and focusing on an A-C-E related career path.
Help us ENGAGE, EXCITE and ENLIGHTEN students about the design + construction industry!

The ACE MENTOR PROGRAM of GREATER PHILADELPHIA is an affiliate of a national non-profit organization. The mission of ACE (Architecture, Construction, Engineering) is to engage, excite, and enlighten high school students to pursue careers in the integrated construction industry through mentoring and to support their continued advancement in the industry through scholarships and grants. Students are recruited from both public and private high schools throughout Philadelphia and the suburbs, with special efforts made to reach the traditionally underrepresented populations of women and minorities.

FOR MORE INFORMATION, please contact our Affiliate Director Tiffany Millner at:

easternpa@acementor.org!
IEEE Section Life Member Event joint with PSPE

PA Society of Professional Engineers Tour of Southeast Wastewater Treatment Plant on:

Thursday, 1/3/2019, 6:00 PM – 7:15 PM

Organized by: Joseph F. Maida, PE, P.Eng. LEED AP

I am confirming the PA Society of Professional Engineers tour of the Southeast Wastewater Treatment Plant on Thursday, 1/3/19 from 6:00 - 7:15 PM. Management staff at the treatment plant have approved the tour.

We appreciate that you have selected a tour of the Philadelphia Water Department's wastewater treatment process, allowing us to showcase our engineering achievements in water pollution control. Drew Brown will lead the tour and provide a written description of the activity for CE credits, as requested.

The tour will include a description of the engineering involved with sewage collection and pumping, screening, sedimentation processes, aeration and biological reduction, final sedimentation, and disinfection. The plant will provide powerful flashlights for the tour, so participants have a good view of the machinery and bays used in the process.

Attached documents to share with participants: Link to Documents

- PWD Sewage Treatment Process - info graphic of the process for cleaning sewage
- Microorganisms in Activate Sludge - description of organisms used to clean sewage
- PWD Sewage Treatment - City Districts - areas of City served by each treatment plant
- PWD Sewage Treatment - Regional Districts - regional areas served by treatment plants
- Directions to SE Treatment Plant - note: parking lot is inside the main gate to the left PWD
- Release Waiver: Link to Waiver

Everyone must sign and submit the attached PWD Release Waiver at the start of the tour.
Please inform participants of the following conditions for the tour:

At 6:00 pm participants will enter the inside gate of the plant and proceed to the opposite end with Drew to begin the tour. Late arrivals may not be able to participate, because everyone inside the gate must be escorted by a PWD staff person.

Sections of the tour will be outside, so everyone must dress for the weather of the day. If the temperature is below 35 degrees, or snow has fallen, and Plant staff has not been able to clear the walkways, or walkways are icy, we will have to cancel the tour.

If it is very cold, Drew will stick to the tunnel that runs through the plant as much as possible, going up and down stairs to take quick peeks at the bays where useful. Anyone with a problem with stairs should “self-select” out of the visit.

Everyone must sign and submit the attached PWD Release Waiver at the start of the tour.

Eating, drinking, and photography are not allowed on the tour.

Thanks,

Environmental Educator
Philadelphia Water Dept. Public Affairs and Fairmount Water Works Interpretive Center

Register Here
# Philadelphia Section Almanack

Vol. 63, No. 12  
December 2018

## PHILADELPHIA SECTION PLANNING CALENDAR

### Current Month: December 2018

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<th>Activity</th>
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<tr>
<td>December</td>
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<tr>
<td>December 1</td>
<td>Application due for Region 2 Awards nominations</td>
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<td>December 1</td>
<td>Signal Processing in Medicine and Biology Conference at Temple (Dr. Joseph Picone)</td>
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<td>December 4</td>
<td>Multi-Society Meeting</td>
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<td>December 11</td>
<td>ADCOM</td>
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<td>December 11</td>
<td>Send sponsorship donation to Del. Valley Eng. Week</td>
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<td>December 31</td>
<td>Last Day to pay 2019 dues</td>
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### Next Year 2019

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<td>Jan 15</td>
<td>ADCOM</td>
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<td>Jan 19</td>
<td>Future City judging</td>
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<td>Jan 22</td>
<td>IEEE Night</td>
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<td>Feb 12</td>
<td>ADCOM</td>
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<td>Feb 14</td>
<td>Engineers Week kickoff event</td>
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<td>Feb 19</td>
<td>DVEW Engineers Social</td>
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<td>Feb 19</td>
<td>IEEE Night</td>
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<td>Feb 28</td>
<td>Treasurer’s Report to IEEE</td>
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<td>March 12</td>
<td>ADCOM</td>
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<td>March 19</td>
<td>IEEE Night</td>
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<td>April 3</td>
<td>Science Fair judging (Oaks PA)</td>
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<td>April 9</td>
<td>ADCOM</td>
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<td>April 13</td>
<td>Awards Banquet</td>
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<td>April 16</td>
<td>IEEE Night</td>
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<td>May 1</td>
<td>New members get 8 months for the price of 6</td>
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<td>May 14</td>
<td>ADCOM</td>
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<td>May 21</td>
<td>IEEE Night</td>
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<td>June 11</td>
<td>ADCOM</td>
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<td>July 10-12</td>
<td>American Control Conference</td>
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IEEE PHILADELPHIA SECTION OFFICERS
Chair: Peter M. Silverberg, P.E.: psilverberg3@comcast.net
Vice Chair: Mark Soffa: msoffa@kns.com
Treasurer: Robert Johnston: rlj1620@gmail.com
Secretary: Chris Vaile: evaile@burns-group.com
Past Chair: Philip Gonski, P.E.: philip.m.gonski@ieee.org

ADMINISTRATIVE COMMITTEE (ADCOM)
ADCOM meets the second Tuesday of the month at the Sheraton University City, 3549 Chestnut St, Philadelphia, PA 19104. Members are welcome to attend. If you want to attend, reserve a seat by calling the IEEE Section Office by the Friday before the meeting.

DIRECTORIES
ADCOM Members  SECTION Chapters  Chapter Chairs Responsibilities

ALMANACK STAFF
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111 Presidential Blvd., Suite 231, Bala Cynwyd, PA 1004, Phone: 484.270.5136
sec.philadelphia@ieee.org

ADVERTISEMENTS – Contact: michael.mayor.pe@ieee.org.
The IEEE Philadelphia Section encourages placement of technical, professional, promotional and commercial advertisements. The Almanack is published ten times a year and is read by approximately 4,000 members in over 150 key industries.
The following rates are designed for the occasional advertisers. A more comprehensive set of benefits is offered in the Sponsorship Program (next page).

Almanack, Website, Email Blasts
One Month Full Page:  $200.-
Three Months Full Page: $400.-
PHILADELPHIA SECTION
SPONSORSHIP PROGRAM

Contact: sec.philadelphia@ieee.org

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| Awards Banquet\(^1\) | • Full Table-10 tickets
• Full page Awards Brochure
• 6-ft Exhibit Table | • 6 tickets
• Half page Awards Brochure
• 6-ft Exhibit Table | • 4 tickets
• Quarter page Awards Brochure
• 6-ft Exhibit Table | • 2 tickets
• Quarter page Awards Brochure |

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<td>IEEE Email Blast(^2)</td>
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NOTES
1 The Awards Banquet is held annually at the prestigious Union League of Philadelphia. The Awards Banquet is a major social occasion, recognizing those honored by the Institute & the Section for their contributions & those honored by organizations with mutual interests of IEEE.

2 Advertisement(s) are prepared by the Sponsor and can contain links to the Sponsor’s website and/or specific events. Advertisement(s) can be different one for each month of benefit or the same for one or more months.
"Forward Thinking for a Sustainable Future"

Keystone Engineering Group, Inc. is a full-service professional engineering firm providing specialized designs for the Water and Wastewater Industry. We proudly keep the client central in our philosophy, operations and ideas.

Keystone provides a collaborative team environment where creative self-starters are encouraged to share their unique capabilities and talents, and continue their professional development. This lively productive setting allows our team to approach projects in innovative ways, and find personalized solutions for all our clients’ needs.

We are searching for an Instrumentation and Controls Designer to join the team at our Frazer, PA office!

Instrumentation and Controls Designer

The Designer will have the opportunity to work collaboratively with Project Managers, Programmers, and Engineers to meet and exceed client expectations.

Contributions as a member of the Automation Design group include:

- Designing electrical wiring diagrams and control panel layouts
- Layout of PLC equipment, including digital and analog circuits
- Creating Bills of Material and choosing components for specific applications
- Constructing Input/Output (I/O) lists
- Creating and verifying As-Built and As-Installed drawings
- Building Instrumentation list and specifications

Tasks are performed primarily in the office, with occasional on-site visits.

The Designer role might be for you if you like to continually learn and improve processes, and possess:

- A Bachelor’s or Associate’s degree in Electrical Engineering, Engineering Technology, Applied Engineering with a Controls concentration, or Electronics Engineering, **with** one to three years of experience
- Knowledge and experience with AutoCAD Electrical 2012 or later versions
- A proficiency with instrumentation, control circuits, networking, Ethernet communications
- Experience in creating Point to Point and Loop Diagrams from electrical schematics
- Applicable knowledge of the UL 508a Code and NEMA Standards
- A working knowledge of 480VAC, 240VAC, 120VAC and 24VDC circuitry, including both Digital and Analog circuitry
- The ability to interpret Engineer specifications and contract drawings
- Knowledge of water/wastewater and associated processes is a plus
- Excellent communication, interpersonal, time management and problem solving skills
- Experience in Microsoft Office Suite: Word, Excel and Outlook

How to Apply:

Please email a Cover Letter and Resume to careers@kegi.net

Keystone Engineering Group, Inc.
590 E. Lancaster Ave, Suite 20, Frazer, PA 19355
www.kegi.net
Automation Engineer/PLC Programmer

"Forward Thinking for a Sustainable Future"

Keystone Engineering Group, Inc. has an exciting opportunity for an experienced Engineer to be a part of our Automation team in our Frazer, PA and Hamilton NJ, offices

Keystone Engineering Group, Inc. is a full-service professional engineering firm providing specialized designs for the Water and Wastewater Industry. We proudly keep the client central in our philosophy, operations and ideas.

Keystone provides a collaborative team environment where creative self-starters are encouraged to share their unique capabilities and talents, and continue their professional development. This lively productive setting allows our team to approach projects in innovative ways, and find personalized solutions for all our clients’ needs.

Opportunities for the Automation Engineer include:

- Design, configuration, programming, and integration of complex control systems
- Take a leadership role in projects from concept through operational readiness
- Clearly articulate Keystone’s services, and work effectively with multi-disciplinary teams to develop solutions for clients
- Conduct hands-on troubleshooting of field control systems
- Provide technical support in resolving equipment and process issues when necessary
- Work closely with clients to identify and create new business opportunities

Other talents and qualifications include:

- A Bachelor’s degree in Engineering or Engineering Technology preferred, or a Bachelor’s degree in a related field, with three or more years of experience in programming of PLC control and PC based SCADA systems
- A Professional Engineer’s License or E.I.T. is a plus
- Proficiency with multiple manufacturers automation hardware and software, including but not limited to:
  - Allen Bradley hardware and software
  - Schneider: Unity Pro, Vijeo Designer, ProWorx32, Telepace Studio, ClearSCADA Host
  - Wonderware InTouch, System Platform, Historian
  - GE hardware and software
- Experience with Hard-wired, Wireless and Cellular Networking
- Knowledge of hydraulic (water) pneumatic controls, VPNs and cyber security is a plus
- Flexibility in adapting with changing and challenging situations
- Possess excellent communication, interpersonal, time management and problem solving skills
- Availability for occasional after hour client support, as well as overnight travel

How to Apply:
Please email a Cover Letter and Resume to careers@kegi.net
Presentation & Paper Topics

- Innovation: Emerging/Future/Disruptive Technical & Entrepreneurial
- Development: Communication skills in written and spoken word, effective dialog
- Empowerment: Women as leaders in education, industry, and government
- Work-Life balance: family systems traditions and changes
- Mentoring women leaders
- Leadership development
- Exploring the attrition gap

Submission Deadline

Presentation only: Title and topic abstract suitable for program (up to 150 words), and an extended abstract for evaluation (up to 2 pages)
Presentations with paper submission: Title and topic abstract suitable for program (up to 150 words), and publication-ready paper (up to 8 pages)
Deadline for all submissions: 25 July 2018


For questions, email: R1R2WIEForum@gmail.com
IEEE SPMB18 is a regional symposium intended to provide a highly interactive forum where bioengineering and signal processing researchers can collaborate on emerging trends in signal processing. We expect approximately 125 researchers to attend. We specifically encourage graduate students to attend and present their thesis or dissertation research. This is an excellent opportunity to network with leading professionals in your field and to form new collaborations.

Signal processing plays a vital role in applications ranging from medical electronics to data mining of electronic medical records. The enormous amounts of data that can be acquired from devices are enabling a new generation of technology based on big data. This symposium is intended to bring together a wide range of professionals interested in applications of signal processing medicine and biology. The symposium is sponsored by IEEE-USA, IEEE Region 2, IEEE Region 2 Philadelphia Section, Temple University, the Neural Engineering Data Consortium and NYU Polytechnic School of Engineering.

The symposium will consist of two plenary talks, two oral sessions and two poster sessions. Exhibits and demonstrations are encouraged as well. Interested parties should contact the conference organizers at help@ieeespmb.org for further details. Please consult our conference archive for additional information about the history of this conference.

**Symposium Topics:**

Traditional signal processing topics include:
- Signal analysis (e.g., EEG, ECG, EMG)
- Medical imaging (e.g., MRI, fMRI)
- Machine learning, data mining and classification
- Big data resources and applications
- Signal processing methods in bioinformatics
- Linear, nonlinear, and adaptive filtering and prediction
- Time-frequency and non-stationary signal analysis

Applications of particular interest this year include:
- Electronic medical records
- Wearable healthcare devices
- Data mining and analytics in healthcare
- Security and reliability in wireless medical technologies
- Biomedical nanosensors and wireless technologies
- Biomedical instrumentation and electrical stimulation

If you have questions about the relevance of a planned submission, feel free to contact the technical committee at help@ieeespmb.org for guidance.

**Paper/Abstract Submission:**

Presenters may choose to submit to one of two peer-reviewed tracks:
1. Paper: An original four to six-page paper for oral presentation.
2. Poster: A one-page abstract that will be presented as a poster.

All papers and abstracts are indexed in IEEE Xplore (search for “IEEE SPMB”). Papers/abstracts can be submitted via email to submit@ieeespmb.org.

Contributions must follow the approved conference formats. See IEEE SPMB Guidelines for more information.

**Important Dates:**

- **Paper Submission**: Aug. 1, 2018
- **Notification**: Oct. 1, 2018
- **Early Registration**: Nov. 1, 2018
- **Final Program**: Dec. 1, 2018

**Organizing Committee:**

**General Chairs:**
- Joseph Picone (Temple)
- Ivan Selesnick (NYU-Tandon)

**Technical Program Chair:**
- Silvia Lopez (Blackfynnn)

**Program Chairs:**
- Nashwa Elaraby (Penn State)
- Amir Harati (Jibo, Inc.)
- Hansen Mansy (UCF)
- Iyad Obeid (Temple)
- Amrita Sahu (Altvia)
- Robin Tibor Schirmeister (Freiburg)

**Industrial Liaison:**
- Michael Mayor (IEEE SPS)

**Publications Chair:**
- Georgios Lazarou (USA)

**Local Arrangements:**
- Shawn Fagan (Temple)
- Eva von Weltin (Temple)

**Web:** [http://www.ieeespmb.org/2018](http://www.ieeespmb.org/2018)

**Contact:** help@ieeespmb.org
2019 American Control Conference: Call for Papers

July 10-12, 2019, Philadelphia Marriott Downtown, Philadelphia, PA (USA) (http://acc2019.a2c2.org/)

The 2019 American Control Conference will be held Wednesday through Friday, July 10–12, at the Philadelphia Marriott Downtown, located in the heart of Center City, Philadelphia. Philadelphia is the birthplace of American democracy, and the home to the creation and signing of the Declaration of Independence and the Constitution. It is also the City of Brotherly Love and considered one of the most European-like cities in the USA, captured by the across-the-street Reading Market and little Italy neighborhood. The city features a cultural diversity of food (and also the original cheesesteak), exhibitions, and museums for all tastes throughout the year, as well as outdoor concerts and festivals during summer.

The ACC is the annual conference of the American Automatic Control Council (AACC), the U.S. national member organization of the International Federation of Automatic Control (IFAC). Society co-sponsors of the ACC are the American Institute of Aeronautics and Astronautics (AIAA), American Institute of Chemical Engineers (AIChE), American Society of Civil Engineers (ASCE), American Society of Mechanical Engineers (ASME), IEEE Control Systems Society (IEEE-CSS), Institute for Operations Research and the Management Sciences Applied Probability Society (INFORMS-APS), International Society of Automation (ISA), Society for Modeling & Simulation International (SCS), and Society for Industrial & Applied Mathematics (SIAM).

Looking forward to seeing you in Philadelphia
Wastewater Treatment

1. Collection and Pumping
2. Screening
3. Grit Removal
   - Grit to Landfill
4. Primary Sedimentation
5. Aeration and Biological Reduction
   - Recycled micro-organisms
6. Final Sedimentation
7. Disinfection
8. Effluent Discharge

Delaware River
In the activated sludge process, microorganisms are mixed with wastewater. The microorganisms come in contact with the biodegradable materials in the wastewater and consume them as food. In addition, the bacteria develop a sticky layer of slime around the cell wall that enables them to clump together to form bio-solids or sludge that is then separated from the liquid phase. The successful removal of wastes from the water depends on how efficiently the bacteria consume the organic material and on the ability of the bacteria to stick together, form floc, and settle out of the bulk fluid. The flocculation (clumping) characteristics of the microorganisms inactivated sludge enable them to amass to form solid masses large enough to settle to the bottom of the settling basin. As the flocculation characteristics of the sludge improves, so is the improved settling and improved wastewater treatment.

After the aeration basin, the mixture of microorganisms and wastewater (mixed liquor) flows into a settling basin or clarifier where the sludge is allowed to settle. Some of the sludge volume is continuously recirculated from the clarifier, as Returned Activated Sludge (RAS), back to the aeration basin to ensure adequate amounts of microorganisms are maintained in the aeration tank. The microorganisms are again mixed with incoming wastewater where they are reactivated to consume organic nutrients. Then the process starts again.

The activated sludge process, under proper conditions, is very efficient. It removes 85 to 95 percent of the solids and reduces the biochemical oxygen demand (BOD) about the same amount. The efficiency of this system depends on many factors, including wastewater climate and characteristics. Toxic wastes that enter the treatment system can disrupt the biological activity. Wastes heavy in soaps or detergents can cause excessive frothing and thereby create aesthetic or nuisance problems. In areas where industrial and sanitary wastes are combined, industrial wastewater must often be pretreated to remove the toxic chemical components before it is discharged into the activated sludge treatment process. Nevertheless, microbiological treatment of wastewater is by far the most natural and effective process for removing wastes from water.

There are five major groups of microorganisms generally found in the aeration basin of the activated sludge process:

1. **Bacteria**—Aerobic bacteria remove organic nutrients
2. **Protozoa**—Remove & digests dispersed bacteria and suspended particles
3. **Metazoa**—Dominate longer age systems including lagoons
4. **Filamentous bacteria**—bulking sludge (poor settling & turbid effluent)
5. **Algae and fungi**—Fungi is present with pH changes & older sludge
1. **Bacteria** are primarily responsible for removing organic nutrients from the wastewater.

2. **Protozoa** play a critical role in the treatment process by removing and digesting free swimming dispersed bacteria and other suspended particles. This improves the clarity of the wastewater effluent. Like bacteria, some protozoa need oxygen, some require very little oxygen, and a few can survive without oxygen.

The types of protozoa present give us some indication of treatment system performance which are classified as follows:

1. **Amoebae** - Little effect on treatment & die off as amount of food decreases
2. **Flagellates** - Feed primarily on soluble organic nutrients
3. **Ciliates** - Clarify water by removing suspended bacteria
4. **Ciliates**; Free-swimming - Removes free-dispersed bacteria
5. **Ciliates**; Crawling (grazing) - Dominate activated sludge / good treatment
6. **Ciliates**; Stalked (sessile) - Dominates at process end

Protozoa images are below:

3. **Metazoa** are multi-cellular organisms which are larger than most protozoa and have very little to do with the removal of organic material from the wastewater. Although they do eat bacteria, they also feed on algae and protozoa. A dominance of metazoa is usually found in longer age systems; namely, lagoon treatment systems. Although their contribution in the activated sludge treatment system is small, their presence does indicate treatment system conditions.

Three most common metazoa found in the activated sludge treatment system.

1. **Rotifers** - Clarify effluent & are first affected by toxic loads
2. **Nematodes** - Feed on bacteria, fungi, small protozoa & other nematodes
3. **Tardigrades** (water bear) - Survive environmental extremes & toxic sensitivity

Metazoa images are below:

4. **Filamentous bacteria** are present when operational conditions drastically change. These bacteria grow in long filaments begin to gain an advantage. Changes in temperature, pH, DO, sludge age, or even the amounts of available nutrients such as nitrogen, phosphorus, oils & grease can affect these bacteria. The dominance of filamentous bacteria in the activated sludge treatment system can cause problems with sludge settling. At times excessive numbers of filamentous microorganisms interfere with floc settling and the sludge becomes bulky. This bulking sludge settles poorly and leaves behind a turbid effluent. Some filamentous microorganisms may cause foaming in the aeration basin and clarifiers.

Filamentous images are below:

5. **Algae and fungi** which are photosynthetic organisms and generally do not cause problems in activated sludge treatment systems, however there presence in the treatment system usually indicate problems associated pH changes and older sludge.
Water Pollution Control Plants Service Areas Within Philadelphia
Directions to the SE Sewage Treatment Plant

25 Pattison Avenue
Philadelphia, PA 19148

From I-95 South

Take exit 19 for I-76 E toward Walt Whitman Bridge/Packer Ave, (staying RIGHT)

Keep right at every choice in the curve, follow signs for I-76 W/Packer Ave and turn right onto S Front St
Drive 0.9 mi, and dead end at Pattison Ave.

Turn left at Pattison Ave

Go Under the bridge and across railroad tracks and take the second turn left into the fenced and labeled Southeast Waste Water Treatment Plant, just before the road divide barrier starts.

Other directions:

From Schuylkill Expressway, exit at Pattison Ave, and drive East. Pass Front Street, go under I-95 bridge, across railroad tracks and take the second turn left into the fenced Southeast Waste Water Treatment Plant, just before the road divide barrier starts.

Public Transportation- not easy. You can take Broad Street Line to Pattison Ave (like going to the sports stadium). Walk East on Pattison Ave, and follow the directions above: Pass Front Street, go under I-95 bridge, across railroad tracks and almost immediately turn left into the fenced Southeast Waste Water Treatment Plant, just before the road divide barrier starts. This is a 16 block walk.

From Columbus Boulevard, Drive South on Columbus Boulevard. It changes to Pattison Ave. The Southeast Sewage Treatment Plant is on your right, 25 E Pattison Ave.
GENERAL RELEASE, WAIVER & INDEMNIFICATION

Name: ________________________  (Please Print)

Address: ________________________

__________________________

I, the undersigned, in consideration of permission granted to visit and/or enter on or into City of Philadelphia property, located at the _______________ Water Treatment Plant (the “Property”), hereby agree for and on behalf of myself, my personal representative, executors, administrators, heirs and assigns, to release, waive or forever discharge The City of Philadelphia (the “City”), its employees, officers, agents, contractors and representatives from any and all manner of claims, actions or causes of action, suits, demands whatsoever, in law or in equity, which I may have against the City, its employees, officers, agents, contractors and representatives in and/or on the Property, or in any way connected to or arising from my presence to visit and/or tour activities at the Property.

The undersigned, being duly aware of the potential risks and hazards inherent upon visiting or entering on or into the Property, hereby elects voluntarily to visit and/or enter on or into the Property knowing that the condition of the Property may be hazardous. The undersigned hereby voluntarily assumes all risks of loss, damage or injury, including death, that may be sustained while in, on, or about the Property whether said injury or damage may be due to the act, omission or negligence of the City, its representatives, or its respective employees, officers, agents, contractors or otherwise.

I further acknowledge and agree that I will indemnify, defend and hold harmless the City and all related persons and entities described in the preceding paragraph against any claims, acts or proceedings based upon or related to my entrance, presence or activities. No photographs, taping or filming upon or in the Property will occur except where authorized.

I will leave the Property upon the completion of my activities or upon the demand of the City, whichever is sooner.

IN WITNESS WHEREOF, I HAVE SET MY HAND HEREUNTO THIS RELEASE, this _________________________ DAY OF ________________________. 20_ _.

__________________________             ________________________
(Witness)                        (Authorized Representative)

Visitor-Release_2004