Applications Friday at the American Control Conference

July 8, 2016, Marriott Copley Place Hotel, Boston, MA (USA) (http://acc2016.a2c2.org/)

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The American Control Conference is one of the major annual global research conferences focusing on the area of automatic control, automation, and optimization. In an effort to encourage participation of local engineers who may not be "ACC regulars", ACC 2016 will feature a special one-day program oriented towards local practicing engineers and students. **We are calling it *Applications Friday*, and it is stocked with events and material geared to be immediately relevant to people who interact with the controls community. If you work with control engineers and would like to understand more of what they say, if you find yourself occasionally using a PID controller at work, if you are a programmer suddenly writing real-time code for a feedback system, if you are an undergraduate wondering what all the fuss is about, *Applications Friday* on the last day of ACC 2016 is for you.**

Special events planned for Friday, July 8:

Plenary Lecture: ***Applications Friday*** will start with our conference plenary lecture, given by Professor Lucy Pao of the University of Colorado, Boulder, describing mechatronic control systems from the very large to the very small in "Combined Feedforward/Feedback Control of Flexible Structures: Recurring Themes across Diverse Applications". Mechatronics – the tight combination of mechanical systems with electronics – are pervasive in our daily lives and these devices span a huge scale of difficult-to-control problems. (They break a lot of the standard methods.) Professor Pao's talks span a broad range from theory to application and are popular with professors, practicing engineers, and students alike.

Applications Tutorials Sessions: Tutorials geared towards practicing engineers will run Friday afternoon so participants can attend focused presentations with minimal time away from work. Tutorial materials will be included with the ***Applications Friday*** registration. *Details of the sessions are on the back page.*

Exhibitor Area: ACC Conference vendors and exhibitors will have an increased Friday presence. Exhibitors are invited to showcase, demonstrate and market control-related publications, software tools, educational products, services, and jobs. Exhibits are open to all attendees of the ACC.

Student Poster Session: A poster session for STEM students to present their research will be held in the exhibit area during the Friday morning session. Prizes will be awarded in several "best poster" categories. *Details of the session are on the back page.*

Special Lunchtime Sessions: Exhibitors and sponsors are planning special sessions during Friday's lunch break. *Check the web site for more details as these sessions are firmed up.*

Special one-day *Applications Friday* registration rates are available for anyone wanting to attend only the Applications Friday portion of ACC 2016. Main conference proceedings are not included in the *Applications Friday* registration, but they may be purchased separately. Applications Friday registrations are not valid for other conference days. All tutorial material will be provided to *Applications Friday* registrants.

Undergraduates (current ID):	Graduate Students (current ID):	Non-Student:
$50	$100	$200

Additional details about Applications Friday (including registration information) can be found here: http://acc2016.a2c2.org/apps_friday.html Updates and details, as well as a pretty cool invitation video, are available on the ACC 2016 web site: http://acc2016.a2c2.org/. General information about the 2016 American Control Conference is also found there.

Public Lecture: Although not taking place on ***Applications Friday***, a special outreach **Public Lecture** will be given Wednesday, July 6, at 6:30 pm by Professor Stephen Boyd of Stanford University. Professor Boyd will describe how algorithms are hidden in modern smart devices in "Mathematical Optimization in Everyday Life: The Growing Role of Hidden Algorithms in Smart Products and Systems". Professor Boyd is famous for his ability to clearly illustrate complex concepts in optimization and control. The lecture is free and open to the public.

IFAC AACC AIAA AIChE ASCE ASME IEEE ISA SCS siam

AF Schedule Outline: Below is a schedule of Applications Friday activities.

8:00—9:30	**Plenary Session: Combined Feedforward/Feedback Control of Flexible Structures: Recurring Themes across Diverse Applications (Salons F & G)**
9:30—10:00	**Coffee Break (Exhibit Area)**
10:00—12:00	**Exhibits/Undergraduate Poster Session (Exhibit Area)**
12:00—1:30	**Lunch Break, Special Sessions**
1:30—3:30	**Applications Tutorials Sessions (Back Bay Area)**
3:30—4:00	**Coffee Break (Exhibit Area), Undergraduate Poster Contest Winners Announced**
4:00—6:00	**Applications Tutorials Sessions (Back Bay Area)**

Registration details: http://acc2016.a2c2.org/apps_friday.html

Application Friday Student Poster Session submission open until June 15: The Application Friday Student Poster Session (10am-noon Friday) is a great opportunity to showcase your work to a broader audience other than the ACC attendees. We expect many local Boston area practicing engineers, entrepreneurs, and students to attend the Application Friday events. Student authors whose papers are presented at ACC are encouraged to also submit a poster. All the accepted posters will be included in the material for the Application Friday registrants. The posters feature results of student-related research, internships and/or co-op assignments, and capstone projects. Undergraduate REU project presentations are encouraged. Prizes will be awarded in several categories, but mostly this event gives students a great opportunity to present their research in areas related to the field of control. Submissions are due by June 15, with acceptance notices sent out by June 22. Posters must be prepared in size E (34" x 44"). PDFs of accepted posters should be submitted through the conference web site by June 1, and they are included in the Applications Friday materials. To submit a poster, follow this link: https://css.paperplaza.net/conferences/scripts/start.pl.

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	Applications Tutorials Sessions (Back Bay Area)		
Track:	**Control in Green Energy (Room: Exeter)**	**Practical Methods 1 (Room: Clarendon)**	**Practical Methods 2 (Room: Arlington)**
Description:	The greening of energy generation and utilization requires a lot of automated intelligence and much of that is tightly coupled to feedback control and system theory. This track presents three tutorials by leading researchers in the areas of smart cars, wind energy, and the smart grid, to give a flavor of the significant impact of control on these areas. This track will give insights into how control and system theory impacts one of the most significant societal problems of our age.	Model-Based Design of control system relies on models for representing plant dynamics, tuning controllers, generating code for production implementation and real-time testing. These steps will be covered in tutorials presented by engineers from The MathWorks. Special attention will be given to various controller tuning and design methods: from simple single-input single-output PID controller tuning to tuning of fixed-structure multivariable controllers and model predictive control design.	Theory is wonderful, but eventually you have to plug theory into the physical world to do control on real systems. After all, model based control requires a good model, and a computer can't touch the real world without some circuits and wiring. This track will focus on some new methods and some new insight on familiar methods in how to make these connections. It will look at these methods from a unified perspective so that PID tuning moves from knob turning to high performance design.
Session 1: 1:30—3:30	• Towards a Smart Society: Controlled Cars, Robots and Humans • Wind Energy and Controls Research	• Model Based Design Tutorial • Model Predictive Control Tutorial	• An Alternative for PID Control: Predictive Functional Control - a Tutorial • Measurements for the Design of Control Systems
Session 2: 4:00-5:00	• Controlling the U.S. Power Grid Smarter	• Practical Techniques for Control Design – from Simple PID Controllers to Complex Multi-Loop Systems	• Understanding and Tuning PID Controllers