



From  
Prof. YangQuan Chen, Ph.D., Director,  
Mechatronics, Embedded Systems and Automation (MESA) Lab  
4225 N. Hospital Road, Atwater, CA 95301  
E: [yangquan.chen@ucmerced.edu](mailto:yangquan.chen@ucmerced.edu)  
W: <http://mechatronics.ucmerced.edu/>  
T: (209)228-4398 (MESA Lab)

UNIVERSITY OF CALIFORNIA, MERCED  
MEAM/EECS, School of Engineering  
5200 N. Lake Road  
Merced, CA 95343  
Phone: (209) 228-4672; Fax: (209) 228-4047  
Office: SE1-254

July 21, 2013

## MESA LAB @ UC MERCED Presents “Drones, Mechatronics and Fractional Calculus – MESA LAB 2013 Mid-Summer Symposium”.

**What:** Summer is the time for productive research! Our first summer symposium will feature special invited keynote speakers who are world famous domain experts. We will have graduates, undergraduates and visiting scholars showing their latest research results and research roadmaps. This full day event will be intellectually stimulating and exciting! All talks are to be “inspiring”, “informing”, “instilling”, “impressing” and maybe a bit “intimidating”, “improvising”.

**Where:** MESA LAB @ UC MERCED. 4225 N. Hospital Rd., Atwater, CA 95301. T:209-2284398

**When:** August 2, 2013. Friday. 9AM to 5PM. Pizza working lunch provided.

**Contact:** Dr. YangQuan Chen, MESA LAB Director email: [yqchen@ieee.org](mailto:yqchen@ieee.org); cell: 209-3862958

### Special invited keynote speakers (confirmed):

Prof. Primo Zingaretti  
Università Politecnica delle Marche  
Dipartimento di Ingegneria dell'Informazione  
via brecce bianche, 60131 Ancona Italy  
tel. +39 071 220 4899, fax +39 071 220 4474  
e-mail [p.zingaretti@univpm.it](mailto:p.zingaretti@univpm.it)

Malgorzata Klimek, Ph.D., D.Sc.  
Head of the Industrial Mathematics Division  
Institute of Mathematics, Vice-Dean for Education  
Faculty of Mechanical Engineering and Computer Science  
Czestochowa University of Technology, Czestochowa, Poland  
Email: [malgorzata.klimek@im.pcz.pl](mailto:malgorzata.klimek@im.pcz.pl)

### Graduates

Brandon Stark | Zhuo Li | Brendan Smith | Sean Rider | Marwin Ko

### Undergraduates

Alyson Cabral | Marina Fernandez | Emerinciana Nolasco | Jesse Bok | Erik Lau | Kevin Stow-Parker | Kevin Rodriguez | Brennan Stevenson | Grant McGregor | Ester Aguilar | Fabian Iniguez | Michael Rubow

### Visiting Scholars

Chun Yin | Taizhi Lyu | Dr. Jiaguo Liu

# Detailed presentation information

(subject to change)

## “Drones, Mechatronics and Fractional Calculus – MESA LAB 2013 Mid-Summer Symposium”.

Time	Speaker Name	Topic	remarks
09:00-09:10	YangQuan Chen	Opening introduction and comments	
09:10-10:00	<b>Malgorzata Klimek</b>	My first fractional calculus paper Fractional Order Mechanics – Fractional order calculus of variation (FOCV) approach	
10:00-10:20	Brandon Stark	ECC13 trip report	
10:20-10:30	Brandon Stark	MESA LAB Summer 2013 Student Projects – A Big Picture View	
10:30-10:45	Zhuo Li	Fractional order relay auto-tuning of MIMO decoupler	
10:45-11:00	Zhuo Li	and its implementation on MIMO peltier testbed	w/ demo
11:00-11:30	Chun Yin	LMI stability condition of LTI fractional order systems – Re-derivation and extensions.	
11:30-12:00	Jiaguo Liu	An overview of classical Bagley-Torvik “Fractional Order Mechanics”	
<b>12:00-13:15</b>	<b>Pizza lunch break; UCSolar.org tour; Flight demo of water sampling drones</b>		
13:15-14:00	<b>Primo Zingaretti</b>	New perspectives for localization of Cooperative Unmanned Aerial Vehicles	
14:00-14:15	Sean Rider	Optimal mobile actuation using networked unmanned cropdusters	
14:15-14:30	Brendan Smith	Brief report on attending “ <a href="#">International Small Unmanned System Business Exposition in San Francisco on July 25-26, 2013.</a> ” Leader-follower pipe line inspection. GLASS-v2 updates.	
14:30-14:45	Marwin Ko/Brandon Stark	HRV (heart-rate variability) and UAV Human Factor Research	w/ demo
14:45-15:00	Taizhi Lyu/Marwin Ko	RS estimator for Hurst parameter estimation in HRV signals	w/ demo
<b>15:00-17:00</b>	<b>Undergraduate research showcases. Show and tell in 10 min</b>		
15:00-15:10	Alyson Cabral	GLaDOS Intelligent System	
15:10-15:30	Marina Fernandez Emerinciana Nolasco	Development of an Inexpensive Health Monitoring System for Small UAVs	
15:30-15:40	Kevin Rodriguez	UAV NDVI mapping postprocessing: updates	
15:40-15:50	Brennan Stevenson	Heliotropic servo control systems for CPV	
15:50-16:00	Kevin Stow-Parker		
16:00-16:10	Erik Lau Forrest Yeh	Smart house platform and cognitive lighting control GLaDOS	
16:10-16:20	Jesse Bok	Motor Health Prognostic System	ME195
16:20-16:30	Ester Aguilar	Bird control using (flying) loud speaker	
16:30-16:40	Fabian Iniguez Michael Rubow	Fixed-wing UAV learning and practice	
16:40-16:50	Grant McGregor	3D printing BobCat project	