

טופס הרשמה

לכבוד
האיגוד הישראלי לבקרה אוטומטית
הפקולטה להנדסת חשמל
קרית הטכניון, חיפה
טל: 04-8294780; פקס: 04-8295757; 04-8205745

א.ג.נ.,

הנני מבקש/ת לרשום אותי ליום עיון בנושא:

Advanced Nonlinear Filtering: Overview and New Results

אשר יערך במלון "דניאל" הרצליה, ביום ב' 11.10.2010

שם: _____

כתובת: _____

טלפון: _____

מקום עבודה: _____

טלפון: _____ פקס: _____

מצרפת המחאה ע"ס _____ ש"ח

תאריך _____ חתימה _____

דמי השתתפות:

סטודנט (בזמן מלא) 100 ₪
רישום מוקדם עד 1.10.2010 400 ₪
רישום החל מ- 3.10.2010 450 ₪

קו 29, מתחנת הרכבת בהרצליה למלון, יוצא כל 10 דקות.

דמי ההשתתפות כוללים ארוחת צהרים, כיבוד וחומר מודפס.
ההרשמה גם במקום, אם יוותרו מקומות.

התכנית

| | |
|---------------|--|
| 08:30 – 09:00 | Registration |
| 09:00 – 09:15 | Opening remarks Prof. Nahum Shimkin, IAAC Prof. Yaakov Oshman |
| 09:15 – 10:45 | Overview of nonlinear filters EKFs, UKFs, particle filters, exact recursive filters, non-recursive filters, various bells & whistles. |
| 10:45 - 11:15 | Coffee break |
| 11:15 – 12:15 | Exact particle flow filters: theory Detailed derivation of new (2010) theory |
| 12:15 - 14:00 | Lunch Break |
| 14:00 – 15:30 | Exact particle flow: numerical results Accuracy & computational complexity with a wide range of parameters varied |
| 15:30 – 16:00 | Coffee break |
| 16:00 – 17:00 | Fresh perspective on research in nonlinear filters Fast PDE solvers, quasi-Monte Carlo, GPUs, sparse tensor products, adjoint method, information based computational complexity theory, mesh free PDE solvers, concentration of measure |

Note: The workshop language is English

Advanced Nonlinear Filtering: Overview and New Results

Particle filters (PFs) implement a recursive Bayesian model using simulation based methods. Avoiding the restricting assumptions of Kalman filtering theory, these methods solve for the posterior probability distributions of the unknown variables within a Bayesian framework, exploiting the dramatic recent increase in computer power. Unlike nonlinear extensions of the Kalman filter, PFs lead to entirely different solutions to the nonlinear, non-Gaussian filtering problem. These solutions can be made arbitrarily close to the exact solutions by increasing the number of particles involved in the computation, thereby also increasing the computation workload.

This tutorial workshop gives a broad overview of state-of-the-art nonlinear filtering methods (EKFs, UKFs, PFs), presents some perspectives on ongoing research in this area, and focuses on a new theory of exact particle flow filters, developed recently by the speaker. The theory is derived in detail, and numerical simulations are used to explore and demonstrate the characteristics of the novel method.

Fred Daum is an IEEE Fellow, a senior Principal Fellow at Raytheon, and a graduate of Harvard University. He was awarded the Tom Phillips prize for technical excellence, in recognition of his ability to make complex radar systems work in the real world. Fred developed, analyzed and tested the real time algorithms for essentially all the large long range phased array radars built by the USA in the last four decades. He has published numerous technical papers, and has given invited lectures at top research universities. He is a Distinguished Lecturer of the IEEE Aerospace and Electronic Systems Society.

We all, practicing engineers and researchers in the field of nonlinear filters and their applications, have a lot to learn from a speaker of this caliber. I wish all workshop participants a fruitful and enjoyable learning experience.

**Yaakov Oshman, Technion
Workshop Organizer
Chair, Israeli Chapter of IEEE's Aerospace and
Electronic Systems Society**



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Jointly with
The Israeli Chapter of IEEE's Aerospace
and Electronic Systems Society (AESS)

הזמנה

ליום עיון בנושא:

**Advanced Nonlinear Filtering:
Overview and New Results**

מרצה:

Frederick E. Daum
Raytheon Company
Woburn, MA

במלון "דניאל", הרצליה

ביום ב' 11 באוקטובר 2010