

Robust Control: Attractive Ellipsoid Method (AEM) and Sliding Mode Control (SMC)

Overview

The objective of the course consists in the introduction of students (and other assistants) in the real dynamic world containing a lot of uncertain factors as well as perturbations essentially affecting the behavior of the system we intend to control. A comprehensive highlights or features of this course are as follows,

- This course introduces a newly developed control design technique for a wide class of continuous-time models governed by ODE with incomplete information on their dynamic description.
- Along with a coherent introduction to the required mathematical background (block matrix, Schur's complement, LMIs and their applications), two main problems are discussed: control of uncertain systems under the complete and incomplete state availability. The last situation requires the implementation some sort of state – observers or “soft-wear filters”.
- Two basic methods are presented in details: Attractive Ellipsoid Method (AEM) and Sliding Mode Control (SMC). Both of them contain new results, recently published in books and papers of prestigious publishers and journals.
- While all require theorems are proved systematically, the emphasis will be on understanding and applying the considered theory to real-world situations.
- During the course for all students (or any other assistants) there will be presented a set of exercises and home-tasks, which will be discussed after the course in the Tutorial sessions.

Dates	06 November to 11 November 2017
Place	Department of Electrical Engineering, National Institute of Technology, Silchar, Assam, India.
Modules	A: Necessary Mathematical Background LMI Nov 06 - Nov 07 B: Attractive Ellipsoid Method, Roust State feedback Design : Nov 08 C: Sliding Mode Control & its Variant: Nov 09 – Nov 11 NUMBER OF PARTICIPANTS FOR THE COURSE WILL BE LIMITED TO FIFTY (50)
Who can Participate...	<ul style="list-style-type: none"> • Interested graduate students. • Some undergraduate students who took before the course “Introduction in Control”. • Researchers in the fields of control engineering and applied mathematics. • The teachers and professors who wish to obtain the complementary material for their graduate courses in Advanced Robust Non linear Control. • Participation from outside NIT Silchar will be given preferences.
Fees	Participants from abroad: USD 500 Industry/ Research Organizations: Rs. 10000/- Academic Institutions <input type="checkbox"/> Faculty: Rs. 5000/- <input type="checkbox"/> External Students: Rs. 1000/- <input type="checkbox"/> Internal PG & PhD Students: Rs. 500/- <input type="checkbox"/> Internal UG Students: Nil The above registration fee is towards instructional materials, computer use for tutorials, 24 hr free internet facility, light refreshments etc. The outstation participants will be provided twin sharing accommodation on payment basis in Institute Guest House if available.

The Faculty



Prof. Alexander S. Poznyak is currently full professor in CINVESTAV-IPN (Centro de Investigación y de Estudios Avanzados del IPN), Department of Automatic Control, México City. He graduated from Moscow Physical Technical Institute (MPhTI) in 1970. He

earned Ph.D. and Doctor Degrees from the Institute of Control Sciences of Russian Academy of Sciences in 1978 and 1989, respectively. From 1973 up to 1993 he served this institute as researcher and leading researcher, and in 1993 he accepted a post of full professor (3-F) at CINVESTAV of IPN in Mexico. For 8 years he was the head of the Automatic Control Department. He is the director of 41 PhD thesis's (37 in Mexico). He has published more than 210 papers in different international journals and 13 books. He is Regular Member of Mexican Academy of Sciences and System of National Investigators (SNI-Emerito from 2014). He is Fellow of IMA (Institute of Mathematics and Its Applications, Essex UK) and Associated Editor of Oxford-IMA Journal on Mathematical Control and Information, of Kybernetika (Czech Republic), Nonlinear Analysis: Hybrid systems (IFAC) as well as Iberamerican Int. Journal on "Computations and Systems". He was also Associated Editor of CDC, ACC and Member of Editorial Board of IEEE CSS. He is a member of the Evaluation Committee of SNI (Ministry of Science and Technology) responsible for Engineering Science and Technology Foundation in Mexico, and a member of Award Committee of Premium of Mexico on Science and Technology. In 2014 he was invited by the USA Government to serve as the member of NSF committee on "Neuro Sciences and Artificial Intelligence".

Course Coordinator



Dr. Rajeeb Dey is an Assistant Professor in the Department of Electrical Engineering, NIT Silchar, Assam, India. His research interest includes time-delay system analysis and robust control. He has worked and discussed many issues on control with Prof. Poznyak during his postdoctoral stay in Mexico.

Course Coordinators

Contact Details

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