电子科技大学 University of Electronic Science and Technology of China 人力资源部教师发展中心

名师讲堂

讲座主题

What is the connection between artificial speech and modern mathematics, and how can this be used in system identification and robust control

主讲嘉宾

上海交通大学 Anders Lindquist 教授
中国科学院外籍院士、IEEE终身会士

讲座时间

2021年3月22日（星期一）上午 10:00–11:00

参会地点

清水河校区宾诺咖啡

内容简介

Every 30 ms your mobile telephone computes a solution to the Carathéodory extension problem, a classical mathematical problem that dates back to the beginning of last century. In 1918 Schur presented a complete parameterization of all solutions to this problem, and the one used in speech processing for a “shaping filter” is called the maximum-entropy solution. In theory, one could improve the quality of speech by choosing another solution, but a requirement on the complexity of the shaping filter renders the Schur parameterization useless and completely alters the underlying mathematical problem. We present another approach to shaping speech which provides a paradigm that can also be applied to problems in system identification, robust control, image processing, etc. It allows for smooth tuning to specifications in a class of solutions with bounded complexity. The methodology employed is a combination of nonlinear analysis, geometry and optimization, but the talk will be given on a descriptive and rather non-technical level.

个人简介

Anders Lindquist is a foreign Academician of the Chinese Academy of Sciences and a Zhiyuan Chair Professor at Shanghai Jiao Tong University. He is also an Emeritus Professor at the Royal Institute of Technology (KTH), Stockholm, Sweden. After receiving a PhD from KTH, he had a full academic career from Assistant to Full Professor in the United States. After this he was appointed to the Chair of Optimization and Systems Theory at KTH, where he also served as the Director of the Center for Industrial and Applied Mathematics. For ten years he was the Head of the Mathematics Department there. Lindquist is also a Member of the Royal Swedish Academy of Engineering Sciences, a Member of Academia Europaea (Academy of Europe), a foreign Member of the Russian Academy of Natural Sciences, an Honorary Member the Hungarian Operations Research Society, a Life Fellow of IEEE, a Fellow of SIAM, and a Fellow of IFAC. He is an honorary doctor at the Technion, Israel, and the recipient of the 2009 Reid Prize in Mathematics from SIAM and of the 2003 Axelby Outstanding Paper Award from the IEEE Control System Society. Moreover, he received the IEEE Control Systems Award, the IEEE technical field award in Systems and Control, for the year 2020, the first person from a Chinese university to receive this award. He is an Honorary Professor at the China University of Petroleum, Qingdao and the University of Yantai and was awarded the Shanghai Magnolia Award from the Shanghai government in 2016 and the Friendship Award (the highest award for foreign experts) from the Chinese government in 2019.

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