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## Academy of Mathematics and Systems Science, CAS Colloquia & Seminars

**Speaker:** Prof Wen-Hua Chen, department of Aeronautical and Automotive Engineering Loughborough University

**Inviter:**

**Title:** Dual Control for High Levels of Automation in Uncertain Environments

**Language:** English

**Time & Venue:** 2022.11.23 16:00-18:00 腾讯会议ID: 525-942-369

**Abstract:** For a system operating in an unknown or changing environment, it is desirable to design a control system to keep it always operating at its best possible performance (e. g. in terms of productivity or efficiency). This talk introduces a new approach, namely dual control for exploitation and exploration (DCEE), to this type of self-optimisation control problems. In this framework, the control action not only drives a system moving towards a believed optimal operational condition, but also aims to reduce the uncertainty of the belief by actively exploring the unknown environment. Autonomous search of the source of airborne dispersion using a robot and maximum power point tracking in solar farming are used as case studies to illustrate the proposed DCEE approach. The link with classic control approaches is also discussed.

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