

**Boğaziçi University**

*Electrical and Electronic Engineering Department*

SEMINAR

**Ertan Onur**

Collective Adaptive Systems of Networked Devices

**21 January 2013 t: 16:00-17:00**

**Yorgo Istefanopulos Seminar Room**

Abstract:

Future networks will consist of trillions of devices and will be very complex to be designed with present engineering paradigms. The emerging networks are heterogeneous, distributed and dynamic. Designing a scalable and dependable large-scale network will be a serious challenge. Beyond the dependability issues, management of the network will be very cumbersome if legacy solutions are employed. A new design paradigm is required. Many organisms have managed to survive in nature for millions of years by decentralization, adaptation and cooperation. In this presentation, we will see how nature can elicit the solution to the problem of trillions of devices and lay the groundwork for collective adaptive systems (CAS) of networked devices. Decentralization signals ad-hoc and peer-to-peer networking. Collective intelligence can be achieved through adaptation by the knowledge plane. Cooperation enables advancement of social welfare through collective operation. In this presentation, we will talk about the initial results on adaptation to network density in large-scale networks and enabling cooperation by imitating neighbors employing network reciprocity.

All interested are cordially invited