Time-Varying Hyperbolic Geometric Graphs (TV-HGGs)

23rd November 2020 | 18:00 - 19:00 | "Drakos" building room 4 (1st floor)

Scientific Information Event

More than a decade ago we discovered a powerful and unique geometric framework explaining the ubiquitous common structure of complex networks and linking this structure to the optimality of their common functions. In this framework, network nodes are mapped to points in hyperbolic spaces, which lie beneath the observable topologies. The analysis of complex networks is then simplified significantly, as their discrete complex structure can be studied in purely geometric terms. This framework, known as hyperbolic geometric graphs (HGGs), has attracted a great deal of interest in mathematics, physics, computer science and biology. However, despite a decade of research, our knowledge and understanding of network geometry is essentially still limited to static HGGs and methods that can only infer the geometry of network snapshots. But real networks are complex dynamical systems, evolving over time with the addition and deletion of nodes and links, and there currently exists no principled theory that can model and predict their dynamics -- a grand-challenge open problem in modern network theory.

In this information event we will give an overview of the TV-HGGs project, which is funded through Cyprus Research and Innovation Foundation. The main aim of the project is to address the above challenge by mapping the general problem of predicting network dynamics to the more specific problem of predicting the motion of nodes in their hidden hyperbolic spaces, and developing models of time-varying hyperbolic geometric graphs.

Tentative Program

18:00 - 18:10:   "General project description"
Prof. F. Papadopoulos

18:10 - 18:25:   "Predicting similarity evolution in real-world networks"
Dr. M. A. Rodriguez-Flores

18:25 - 18:40:   "Dynamics of hot versus cold random hyperbolic graphs"
Dr. S. Zambirinis

18:40 - 18:55:   "Hyperbolic embedding of the third-party domains ecosystem"
Dr. C. Iordanou

18:55 - :   Discussion

Location details: "Drakos" building (corner of Saripolou and Athinon street, Limassol, room 4 (1st floor).
Location link: https://www.google.com/maps/dir//34.6755161,33.0434705/@34.6753853,33.0430712,20.27z
Limited seating will be available and registration is required. Kindly note that it is also required to have a **"Safe Pass"**.

Please register here: https://forms.gle/xN3x6xqYg9Vxv1qa6