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| ***CRC TIER II CANDIDATE******DR. Lorenzo Livi****Research Presentation Open House***Monday, April 10, 2017****3:30 - 4:30 pm****111 Armes Building** |

Research Presentation - 3:30 - 4:30 pm

Title – Research Presentation

“Analysis of Complex Data with Applications to Biological Systems”

In this talk, I will discuss about past, current, and future research topics that characterize my research activity. First, I will talk about learning in “non-geometric spaces”. Typical learning problems are conceived on geometric domains, such as Euclidean spaces. However, many real-world applications deal with data that are better characterized by more complex representations, such as labeled graphs. Here, I will also establish a connection with research on information-theoretic and unsupervised learning techniques. Successively, I will discuss about research on protein molecules, which provides a suitable application domain where such methods play an important role. In fact, folded proteins can be represented as graphs, typically called protein contact networks. I will elaborate over recent research results in the context of protein contact networks that offer a link with the field of complex systems. Notably, I will discuss about diffusion properties and generative models of protein contact networks. Finally, I will discuss current and future research directions pointing to (artificial) recurrent neural networks, time-varying graphs and non-stationary environments, unsupervised learning in deep neural networks, and various applications in computational neuroscience.

**Bio**

Lorenzo Livi received the B.Sc. and M.Sc. degrees from the Department of Computer Science, Sapienza University of Rome, Italy, in 2007 and 2010, respectively, and the Ph.D. degree from the Department of Information Engineering, Electronics, and Telecommunications at the Sapienza University of Rome, in 2014. He has been with the ICT industry during his studies.

From January 2014 until April 2016, he was a Post Doctoral Fellow at Ryerson University, Toronto, Canada. From May 2016 until September 2016, he was a Post Doctoral Fellow at the Politecnico di Milano, Italy and Universita' della Svizzera Italiana, Lugano, Switzerland.

Currently, he is a Lecturer (Assistant Professor) in Data Analytics with the Department of Computer Science at the University of Exeter, UK.

He is member of the editorial board of Applied Soft Computing (Elsevier) and a regular reviewer for several international journals, including IEEE Transactions on Fuzzy Systems, Information Sciences and Neural Networks (Elsevier). He is a member of IEEE.

His research interests include computational intelligence methods, time-series analysis and complex dynamical systems, with focused applications in systems biology and neuroscience.