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Education
1992   BS in Computer Science, University of Crete
1994   M.Sc. in Computer Science, New York University
2002   PhD in Computer Science, Columbia University

Research Interests
Network analysis and modelling, with extensive experience in employing powerful statistical analysis and machine-learning methods to analyse measurements from real-world complex network environments (e.g., Internet, wireless infrastructures, water distribution networks, brain).

Research Activities in Computational Neuroscience
How does the brain perform the computations that allow us to perceive the environment? How does information about the visual stimulus is represented in each layer of the primary visual cortex (V1) and what is the computational significance of differences identified across layers? High resolution optical imaging has recently revealed the dynamic patterns of neural activity across layers of V1. Our team aims to analyze how these patterns emerge across layers under different visual stimuli, with a particular emphasis on the impact of noise and how they relate to visual perception. We apply advanced statistical analysis and machine-learning techniques to identify activity patterns elicited in different layers by various stimuli and the underlying functional networks and relate them to stimulus encoding and information transfer, under different levels of noise. We then highlight the temporal dynamics of the patterns and their significance in encoding the stimulus. Understanding the rules that activity patterns follow to give rise to visual perception will shed light to the circuit pathophysiology of several neurological disorders. Principles uncovered by this interdisciplinary approach could also shape the design of neuroscience-inspired deep-learning network architectures.

Awards
Comcast Innovation Fund, August 2016; **Fulbright Award** 2016 for visiting professorship at CSAIL MIT；**Google Faculty Award** for Research Excellence in Academia 2013; **Research Excellence**, Investigator-driven Grant (similar to NSF Career Award) 2012–2015; **UNC Junior Faculty Development Award** 2006; **IBM Faculty Award 2004** & **IBM Faculty Award 2003.**

Recent Funding in Computational Neuroscience
1. Hellenic Foundation for Research & Innovation for the support of postdoctoral researchers 2018-2021, on Dissecting Multi-Neuronal Modules of Computation in the Neocortex. *Ranked among the top 5 in the areas of Mathematics and Communication Sciences (*€ 237,000, Coordinator).
2. Niarchos-FORTH Postdoctoral Fellowship 2019-2020 on Network Analysis of Visual Cortex during Learning
3. Fondation Santé, January 2019-2020, Neuronal networks in epilepsy – Deciphering the role of activity patterns in focal cortical seizures (€25,000, PI)

Recent Publications in Computational Neuroscience
1. G. Tzagkarakis A. Palagina, I. Smyrnakis, S. Smirnakis, M. Papadopouli. D**etection of stimuli changes in neural eventograms using the line of synchronization of global recurrence plo**ts. IEEE ICASSP 2019
2. E. Troullinou, G. Tsagkatakis, A. Palagina, M. Papadopouli, S. Smirnakis, P. Tsakalides, Dictionary Learning for Spontaneous Neural Activity Modeling *25th European Signal Processing Conf. (EUSIPCO),* 2017.