FIFTH SEMINAR

D² SEMINAR SERIES

Florence Center for Data Science 'Double' Seminar Series

Florence Center for Data Science is happy to present the fifth seminar of the Series on **October 15th**, from **2 - 3.30 pm**

Click on the link below to register for the seminar (free of charge): https://us02web.zoom.us/webinar/register/WN_3tq7BbbwTSeA956KFQIK0w

SPEAKERS, TITLES, ABSTRACTS:

Leonardo Bargigli - Department of Economics and Management, University of Florence

Title: *Endogenous and Exogenous Volatility in the Foreign Exchange Market (with G. Cifarelli)*

Abstract: We study two sources of heteroscedasticity in high-frequency financial data. The first, endogenous, source is the behaviour of bounded rational market participants. The second, exogenous, source is the flow of market-relevant information. We estimate the impact of the two sources jointly by means of a Markov switching (MS) SVAR model. Following the original intuition of Rigobon (2003), we achieve identification for all coefficients by assuming that the structural errors of the MS-SVAR model follow a GARCH-DCC process. Using transaction data of the EUR/USD interdealer market in 2016, we firstly detect three regimes of endogenous volatility. Then we show that both kinds of volatility matter for the transmission of shocks, and that the exogenous information is channelled to the market mostly through price variations. This suggests that, on the FX market, liquidity providers are better informed than liquidity takers, who act mostly as feedback traders. The latter are able to profit from trade because, unlike noise traders, they respond immediately to the informative price shocks.

Chiara Marzi - Institute of Applied Physics 'Nello Carrara' (IFAC) - National Research Council (CNR)

Title: *Artificial Intelligence in Neuroimaging*

Abstract: Life sciences data coupled with Artificial Intelligence (AI) techniques can help researchers accurately pinpoint novel biomarkers. AI can propose new indices as potential biomarkers while simultaneously aiding in searching for hidden patterns among "well-established" indices. In this webinar, we will take a brief journey through some applications of Machine Learning in neuroimaging. In the first part of the webinar, we will talk about the not so easy "marriage" between AI and clinical data, focusing on Big Data from Radiology Imaging and related issues. In the second part, we will see how we can transfer mathematical, physical, and statistical ideas to the Neuroimaging domain and how AI can help this transfer. An example is the study of the structural complexity of the brain starting from MRI images, using fractal analysis. The Fractal Dimension (FD) can be considered a measure of morphological changes due to healthy ageing and/or the onset of neurological diseases. The use of ML techniques can promote the candidature of FD as a biomarker for many neurological diseases.