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SEMINARIO

APRENDIZAJE DE MAQUINAS

PRIMERA SESIÓN

Título: Machine Learning for Financial Statement Fraud
Cuándo: 14:30-15:00, viernes 15/1/2016
Quién: María Jofré (estudiante de doctorado, University of Sidney, Australia.)
Dónde: Sala John von Neumann, CMM, 7mo piso.

Abstract: Financial statement fraud (FSF) is a global concern representing a significant threat to financial system stability. In recent years, data-informed quantitative models have been developed to automate and reduce the manual auditing processes. Although the existing techniques have improved the detection rate of FSF, these are very limited and can be improved in terms of data, accuracy and efficiency, leading to more targeted and effective examinations. The main objective of this study is to develop four machine learning methods - Discriminant Analysis, Logistic Regression, Decision Trees and AdaBoost - in order to differentiate between fraud and non-fraud cases by assessing the likelihood of FSF using publicly available financial statement information.

SEGUNDA SESIÓN

Título: How neuroscience can benefit from advances in machine learning? the example of high-resolution retinal prosthesis.
Cuándo: 15:00-15:30, viernes 15/1/2016
Quién: Gonzalo Mena (estudiante de doctorado, University of Columbia, EEUU)
Dónde: Sala John von Neumann, CMM, 7mo piso.

Abstract:
Recent advances in experimental techniques have enabled large-scale recordings and stimulation of neural populations (e.g. multi-electro arrays, optogenetics) comprising thousands of neurons or even entire brains. The central question now is how do we make sense of these huge volumes of

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data: if methods for processing massive datasets were available, we could, for example, enable the online control of the activity of populations of neurons.

This talk is concerned with the data-processing methods that are necessary to make possible these closed-loop interactions in the specific context of retinal electrical stimulation (a proposed framework for the development of high-resolution retinal prosthesis). Here, the most elementary step is to single-out activity of individual neurons out of voltage recordings (spike sorting), in order to determine how cells respond to electrical stimuli. The main challenge is that recordings are heavily corrupted by stimulation-induced artifacts, which render the usual methods for spike sorting useless. We propose a method based on the modeling of the artifact as a Gaussian Processes with covariance given by a Kronecker product of non-stationary Kernels. Our method scales well to dense large-scale recordings and preliminary results show it leads to an accurate spike sorting algorithm.

Viernes 15 de Enero 2016, a contar de las 14:30 hrs, Sala de Seminarios John Von Neumann CMM, séptimo piso, Beauchef 851, Torre Norte.