

UNIVERSITY OF HOUSTON

The Brain Center and IEEE EMBS Distinguished Lecture

Fusing Simultaneously Acquired EEG and fMRI to Infer Spatiotemporal Dynamics of Cognition in the Human Brain



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Electrical Engineering and Radiology
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Friday, 20 April. Reception: 10:30 am. Lecture: 11:00 am to 12:00 pm

W122 Engineering Building II, University of Houston

RSVP for free online:

https://uh_embs_sajda.eventbrite.com

LECTURE ABSTRACT

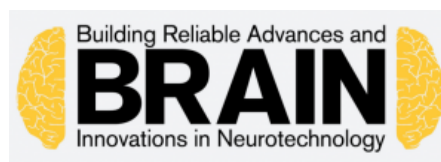
Advances in neural signal and image acquisition as well as in multivariate signal processing and machine learning are enabling a richer and more rigorous understanding of the neural basis of human decision-making. Decision-making is essentially characterized behaviorally by the variability of the decision across individual trials—e.g., error and response time distributions. To infer the neural processes that govern decision-making requires identifying neural correlates of such trial-to-trial behavioral variability. In this talk I will discuss how we are using simultaneously acquired electroencephalography (EEG) and functional magnetic resonance imaging (fMRI) to infer the spatiotemporal dynamics that underlie the formation and execution of rapid perceptual decisions. Focus will be on the different approaches we have developed to couple the trial-to-trial variability in the EEG and hemodynamic signals, and how to relate the resulting measures to elements of the perceptual decision-making process.

SPEAKER BIOSKETCH

Paul Sajda (IEEE Fellow, AMBIE Fellow, AAAS Fellow) is a Professor of Biomedical Engineering, Electrical Engineering and Radiology (Physics) and a Member of Columbia's Data Science Institute at Columbia University. He is interested in what happens in our brains when we make a rapid decision and in real-time brain-computer interfaces that are aimed at improving interactions between humans and machines. He is also applying his methodology to understand how deficits in rapid decision-making may underlie and be diagnostic of many types of psychiatric diseases and mental illnesses. Professor Sajda is a co-founder of several neurotechnology companies and the Chair of the IEEE Brain Initiative.

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