

## Software Engineering Seminar

### January 12<sup>th</sup> 13:00-14:00- Online -

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## New developments in fuzzy time series methods

**Prof. Frederico Gadelha Guimarães**

Machine Intelligence and Data Science Laboratory (MINDS)  
Dept. of EE, Federal University of Minas Gerais (UFMG), Brazil

### **Abstract:**

Fuzzy Time Series (FTS), introduced in the early 1990s by Song and Chissom, can be viewed as a way to represent time series from the perspective of fuzzy logic. Numerical data is translated into fuzzy sets generating a fuzzy representation of the time series. Then, temporal patterns are extracted according to the number of past observations (lags) that are considered in the model to produce a rule-based knowledge base. The knowledge base is the model that is then used for forecasting. In this talk, I will review the latest developments in FTS methods, including interval and probabilistic forecasting, multivariate forecasting, adaptive and evolving models and hybrid methods. I will also present the pyFTS library, an open source Python library for FTS developed in the MINDS laboratory.

### **Short bio:**

Frederico Gadelha Guimarães received his B.Eng. and M.Sc. degrees in electrical engineering from the Federal University of Minas Gerais (UFMG), Belo Horizonte, Brazil, in 2003 and 2004, respectively. He received a Ph.D. degree in Electrical Engineering from the Federal University of Minas Gerais in 2008, with a one-year visiting student scholarship at McGill University, Montreal, Canada (2006–2007). He had a postdoctoral fellowship (2017–2018) at the Laboratoire Images, Signaux et Systèmes Intelligents (LiSSI), linked to the Université Paris-Est Créteil (UPEC), Paris, France. In 2010, he joined the Department of Electrical Engineering, UFMG, and in 2018 he became an Associate Professor. He has been responsible for the Machine Intelligence and Data Science Laboratory (MINDS) for computational intelligence research since 2014. Dr. Guimarães has published more than 200 papers in journals and conferences. He has experience in Electrical Engineering and Computer Engineering, with emphasis on optimization, artificial intelligence, machine learning, time series forecasting, genetic algorithms and evolutionary computation. He is an Associate Editor of the journals Elsevier Neurocomputing (IF 4.438) and IEEE Access (IF 3.745). He is a Senior member of the IEEE Computational Intelligence Society (CIS) and the IEEE Systems, Man, and Cybernetics Society (SMCS).