# CoCo Seminar Series Spring 2025

## [Extra CoCo Seminar] Description and Recognition of Bots in X on Environmental Sustainability

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**Monday April 14, 2025 12:00-1:00pm EDT**
**Hybrid (EB-T1 & Zoom; meeting link available on http://coco.binghamton.edu/)**

The utilisation of social networks has grown considerably in recent years, with X (Twitter) being one of the major channels for the propagation of opinions and news. The user recognition and categorisation as bots are key, especially in relevant topics such as environmental sustainability. Our work extended previous pieces of research related to user characterisation, constructing a machine learning model that utilise as variables data concerning the sequence and attributes of the messages sent from the accounts, as well as features that define the accounts. The work was executed on the basis of data from 38,615 authors who had tweeted about environmental sustainability. By applying text compression algorithms (brotli, snappy) and Random Forest, C5.0 and CART methods, we optimise previous results, achieving a more accurate characterisation according to the evaluation parameters. In addition, we used a methodology based on complex networks to investigate the language used by the accounts that post on environmental sustainability. We obtain the most relevant words used in the messages, being similar in bots and non-bots accounts. However, the more repetitive behaviour patterns exhibited by bots allowed these users to be detected through the models employed, despite the fact that the bots had been able to mimic the language around environmental sustainability.

Javier Gómez Sánchez-Seco is a Research Assistant at the Universidad Francisco de Vitoria, Spain, and currently a CoCo Visiting Scholar. He is finishing his PhD in Complex Systems at the Universidad Politécnica de Madrid under the guidance of Prof. Rosa Benito and Prof. Mary Luz Mouronte. He obtained his BSc in Marine Sciences at the University of Alicante and his MSc in Biophysics at the Autonomous University of Madrid. His research interests include the physics of complex systems and network science, as well as their relationship with ecology and biological sciences.

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