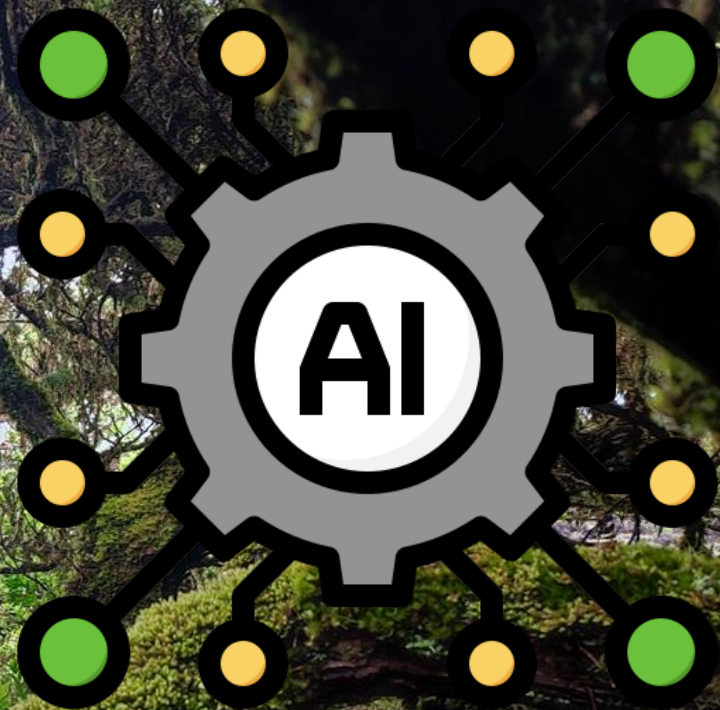


# Predictive modeling of Arthropod Community composition with Recurrent Neural Networks



*Sébastien Lhoumeau*



**UAc**  
UNIVERSIDADE  
DOS AÇORES





Who am I ?

PhD student (GBA / AirCentre)  
Ecologist! Neither a programmer nor a developer  
Mainly R / Gradually switch to Julia



# What am I studying ?

Earth observation (but not mainly from satellites)  
Monitoring project of native forest since 2012

Focus on BUGS arthropods







# What do we have now ?

## Seasonal abundance time series

## How species diversity change through time



Article

### Assessing the Impact of Insect Decline in Islands: Exploring the Diversity and Community Patterns of Indigenous and Non-Indigenous Arthropods in the Azores Native Forest over 10 Years

Sébastien Lhoumeau <sup>1,\*</sup> and Paulo A. V. Borges <sup>1,2,\*</sup>

<sup>1</sup> eE3c—Centre for Ecology, Evolution and Environmental Changes, Azorean Biodiversity Group, CHANGE—Global Change and Sustainability Institute, School of Agricultural and Environmental Sciences, University of the Azores, Rua Capitão João d'Ávila, Pico da Urze, 9700-042 Angra do Heroísmo, Azores, Portugal

<sup>2</sup> IUCN SSC Mid-Atlantic Islands Invertebrate Specialist Group, 9700-042 Angra do Heroísmo, Azores, Portugal

\* Correspondence: seb.lhoumeau@gmail.com (S.L.); paulo.av.borges@uac.pt (P.A.V.B.)

# What is my intuition ?

Create a model that can predict what is the most likely to happen next

Time series forecasting





# What are the requirements?

Assemblage forecasting

Flexibility (Scenario explorations)

New for science!



## What is the exercise ?

Discuss the use of RNN in forecasting ecologically associated time series

Try to implement (train and test) a RNN that fit these requirements