**ECE 8527: Introduction to  
Machine Learning and Pattern Recognition**

# HW No. 6: Hidden Markov Models (HMMs)

Reproduce the results shown in this tutorial:

*<https://isip.piconepress.com/courses/temple/ece_8527/homework/2025_00_spring/hw_06_v03_medium.pdf>*

Reproduce the plots shown in this tutorial and include those in your submission.

Hidden Markov Models (HMMs) with Gaussian mixture distributions are a very powerful way to model and classify signals that have both a temporal and spectral component, since the model learns the temporal structure of the data using a Markov process.

**Acknowledgement:** Thanks to Yusuf Qwareeq, who took this course in Spring 2025, for rewriting the original Medium tutorial to use a newer package called [Pomegranate](https://pomegranate.readthedocs.io/en/latest/). This package is available on GitHub [here](https://github.com/jmschrei/pomegranate).