Mini-Project: Lomb-Scargle Periodogram

For the goals of the mini-project, the specific tasks, and the assignments, see the document "mini-project goals, tasks, and assignments".

Description of the Mini-Project

The Lomb‚ÄìScargle periodogram is a well-known algorithm for detecting and characterizing periodic signals in unevenly sampled data. It finds interesting applications, like in astrophysics, as described by this article

For this mini-project, it is interesting to:
- Understand the paper of Jacob T. VanderPlas (see references) and the code used to generate the paper results;

- Generate simulated data (unevenly sampled) to test the method;

- Get real data (*e.g.* RR interval of ECG) and test the method.

- compare with a standard Periodogram based approach applied directly on the unevenly sampled data or on an interpolated and regularly re-sampled data.

References:
- VanderPlas, Jacob T.. *Understanding the Lomb-Scargle Periodogram.* The Astrophysical Journal Supplement Series, 236:16 (28pp), 2018 May. Article and Python code.