Bulletin for Dryol Lumbard

Beginning in 2000, PhysioNet host an annual challenge on clinically important problems involving data whereby participants are invited to submit solutions that are run and scored on hidden test sets to give overall rankings. This year’s challenge was the “Early prediction of Sepsis from Clinical data” sponsored by the Gordon and Betty Moore Foundation, Google and MathWorks. Sepsis is a life-threatening condition caused by your body’s response to an infection. In the US alone, there are over 970,000 reported cases of sepsis each year accounting for between 6-30% of all ICU admissions and over 50% of hospital deaths. It has been reported that in cases of septic shock, the risk of dying increases by approximately 10% for every hour of delay in receiving antibiotics. Early detection of sepsis events is essential improving sepsis management and mortality rates in the ICU.

The team from Oxford which consisted of James Morrill, Andrey Kormilitzin, Alejo Nevado-Holgado, Sam Howison, and Terry Lyons built a method based on feature extraction using the Signature method. The entry officially ranked 1st place of 105 total entries with a score from the official challenge scoring metric of 0.360 with positions 2, 3, and 4 being scored at 0.345, 0.340, and 0.339 respectively. They also showed how the model predictions could be used to provide an early warning system for high risk patients who can be given additional treatment or subject to closer monitoring. This work was made possible by support from the EPSRC and the Alan Turing Institute.