HARNESSING PHYSIOLOGICAL DATA FOR EARLY WARNING OF THREAT EXPOSURE

Predicting Disease Outcomes From Physiological Data In The Common Marmoset

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The use of easily-collected physiological data to predict disease states prior to the onset of overt symptoms has garnered significant attention in recent years, both as a method of early warning and to reduce humane endpoints in animal studies. A variety of methods have been proposed that span simple combinations of multiple metrics, advanced signal analysis of high resolution time series data, or machine learning methods. Here we apply several such approaches to data from animal studies exposing six different pathogens to the common marmoset. Across the studies, data from 87 animals was considered and included high-resolution temperature, activity, and clinical signs scoring data. We present the results of these analyses and consider the pros and cons of different approaches in the context of reducing the humane endpoint. In addition, we anticipate that the methods applied here could find utility in predicting disease in humans.