



# Shannon Harris

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**Predicting Binary Outcomes with Sums of Exponentials**

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We present a new model for predicting the next outcome of binary time series, where the outcome, success or failure, is the result of human behavior. The model is a parsimonious, pure forecasting model that combines regression modeling and the sum of exponential functions to produce probability estimates. The model not only can be shown to have good predictive power as compared to established models, but also generates parameters that can give insight into how past human behavior effects future behavior. Additionally, our choice of the exponential function for modeling leads to tractable analysis that can be easily applied to large data, and results that can be proven to be optimal and unique.