

# Predicting Chronic Diseases Using Nonlinear Systems

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**Abstract:** *Healthcare heavily relies on advanced analytics to predict diseases and risks, with an abundance of health data being gathered through IoT and smart healthcare. Nonlinear systems and synchronization techniques play a crucial role in analyzing this data and predicting chronic diseases, such as cancer, cardiometabolic disease, and Parkinson's disease. Using machine learning and computational intelligence, nonlinear analysis offers valuable insights into the enormous amounts of data collected in smart healthcare settings, enabling more accurate and efficient disease prediction. This chapter explores the various aspects of nonlinear systems and synchronization techniques in predictive analytics, providing a holistic view of their applications in chronic disease prediction*

**Keywords:** Nonlinear systems, Healthcare, Artificial intelligence, Computational intelligence, Machine learning, Predictive analytics, Chronic disease