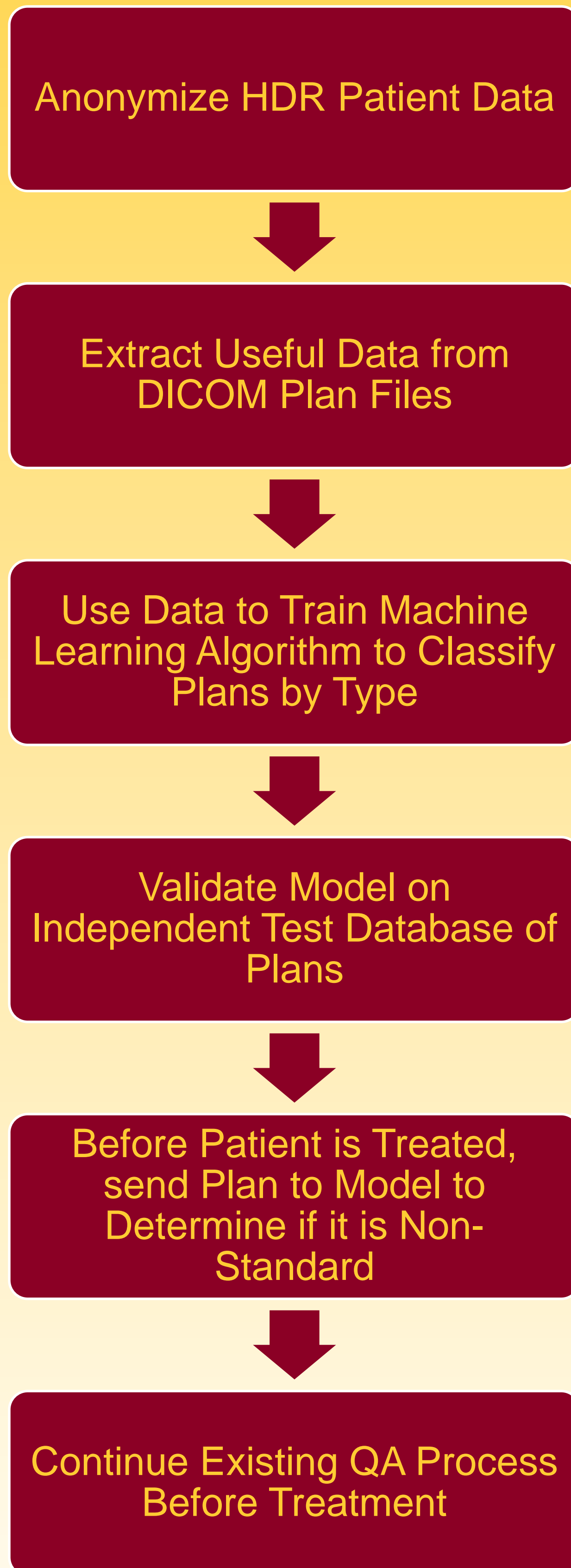


Using Machine Learning to Develop a Novel Error Detection Algorithm for HDR Brachytherapy

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Proposed Clinical Workflow



Purpose: To develop a machine learning model to detect errors in HDR brachytherapy treatment plans

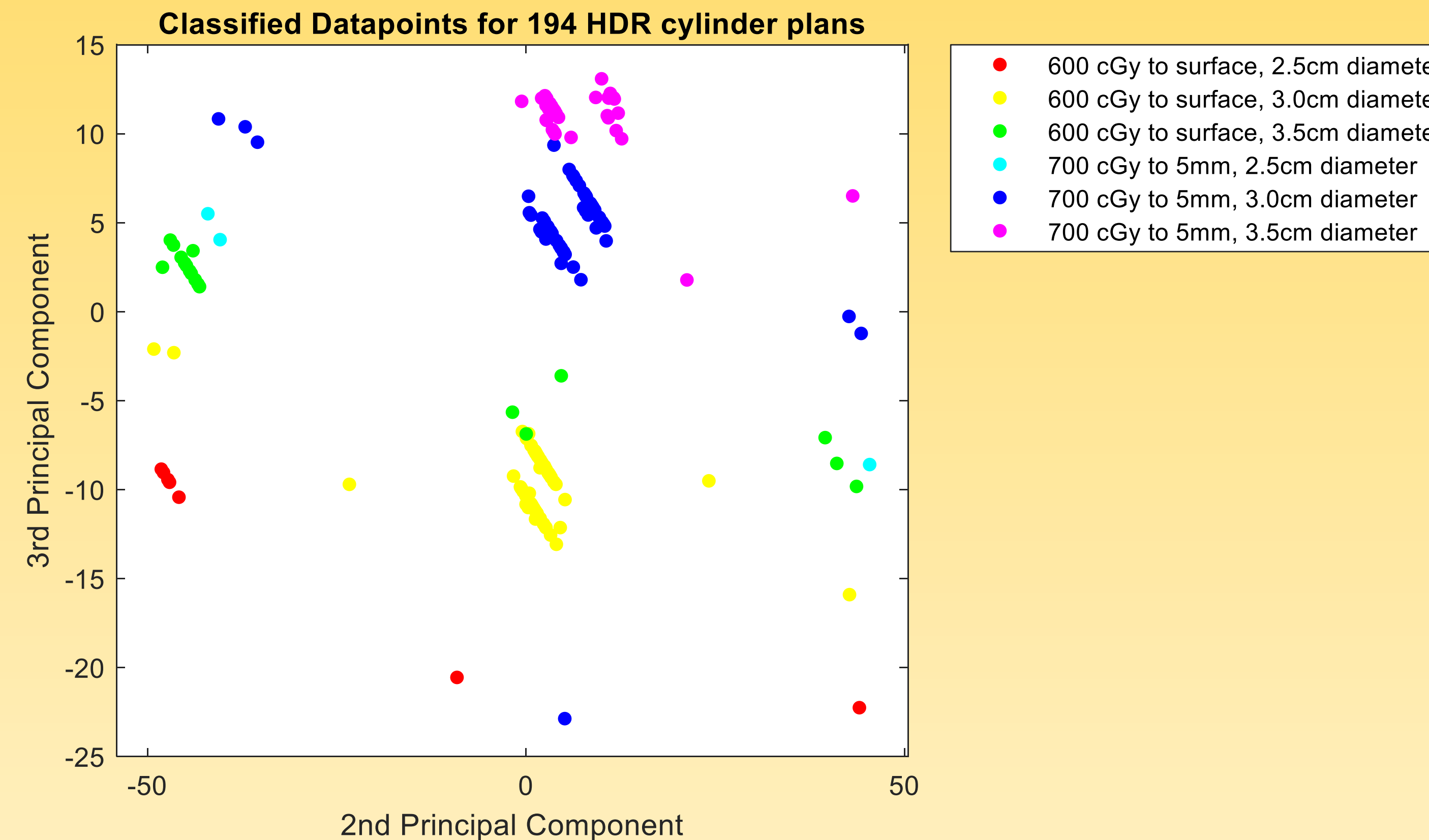


Figure 1. Classified datapoints for 194 sequential HDR cylinder treatment plans treated at the University of Minnesota

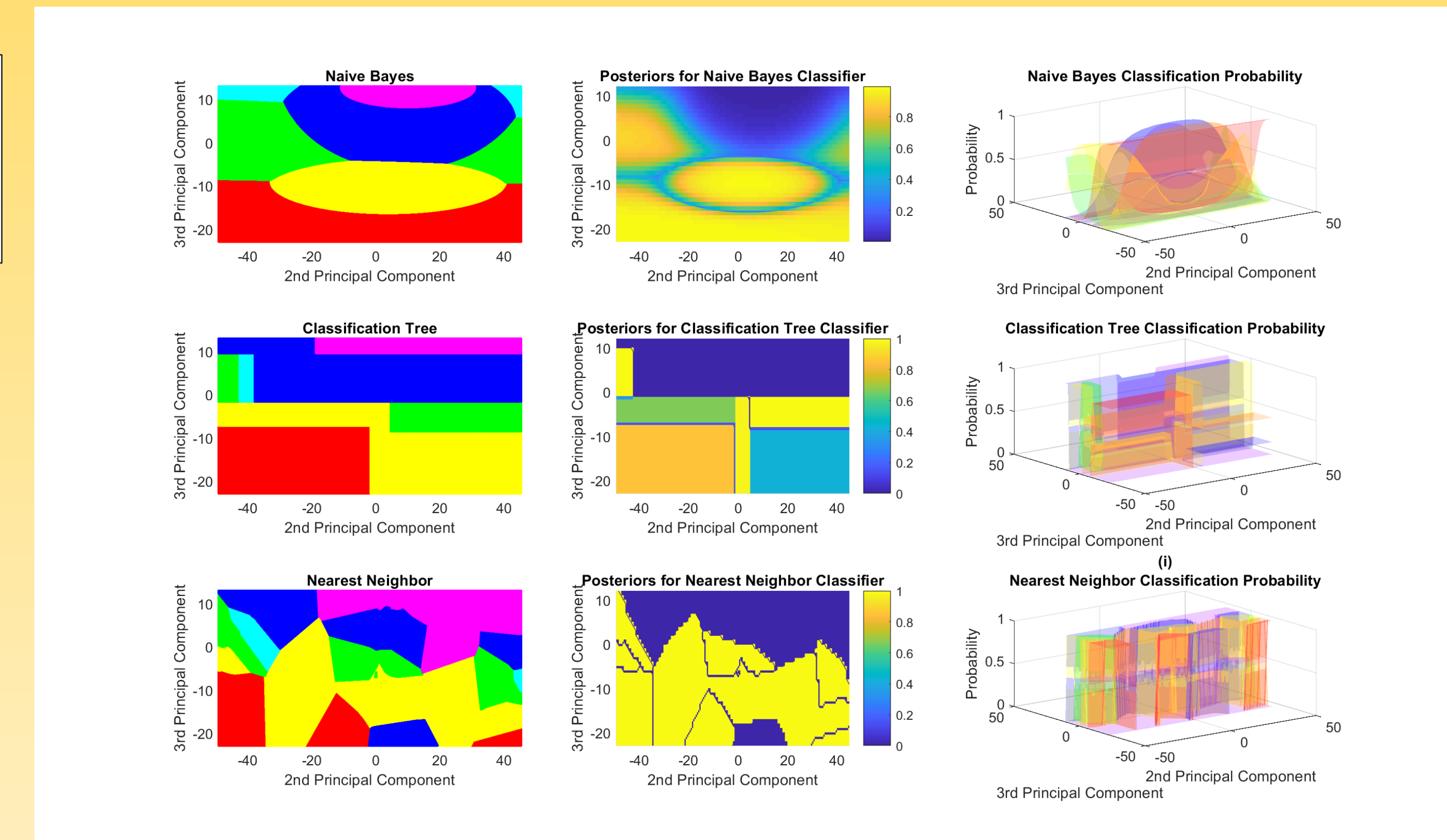


Figure 2 Classification output (a), confidence (b), and classification probabilities (c) for three types of classification algorithms

Machine learning is a powerful tool that can be applied to detecting errors in HDR brachytherapy.

Our model is able to detect errors in planned dose, treatment length, prescription dose, and cylinder diameter

This method of error detection, when coupled with existing safety checks for plan errors, is an improved technique for ensuring safe and accurate treatment delivery for HDR patients.