

A Machine Learning Algorithm for Predicting Colorectal Cancer Recurrence

The solution is a machine learning model to predict CRC recurrence and help with medical decision-making in a dynamic manner.

What is the Problem?

Colorectal cancer (CRC) has a high recurrence rate following primary treatment and is the third most diagnosed cancer worldwide. The CRC recurrence rate is highly variable from individual to individual and over time. The identification of patients at high risk of recurrence is crucial for improving personalized decision-making, as it allows for targeted surveillance of these patients while sparing low-risk patients from needless testing. As a result, there is a need to develop methods to evaluate CRC risk to improve patient outcomes and decrease costs of frequent testing.

What is the Solution?

The solution is a machine learning model to predict CRC recurrence and help with medical decision-making in a dynamic manner. A risk prediction model was developed using electronic health record data from patients diagnosed with CRC and longitudinal carcinoembryonic antigen (CEA) biomarker data. The model is dynamically updated with 6-month changes in log CEA, the strongest predictor of recurrence.

What is the Competitive Advantage?

The competitive advantage of this technology lies in its ability to dynamically incorporate up-to-date patient information to provide individualized risk predictions. The use of this machine learning model could improve personalized decision-making for patients at risk of CRC, helping to identify patients at high risk of recurrence and enabling targeted interventions. By providing individualized risk predictions for patients that are updated over time, this technology could be utilized for decision-making in clinical practice.

References

1. Rodriguez, P. J., Heagerty, P. J., Clark, S., Khor, S., Chen, Y., Haupt, E., Hahn, E. E., Shankaran, V., & Bansal, A.(2023) , <https://ascopubs.org/doi/full/10.1200/CCI.23.00066>, <https://ascopubs.org/journal/cci, 7, e2300066>

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