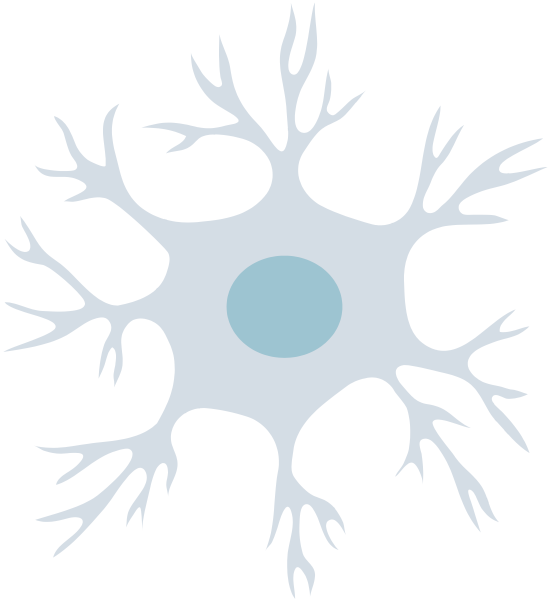
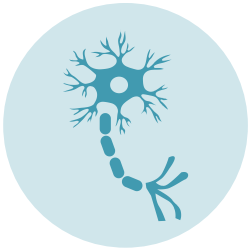


Parkinson's Disease Predictive Machine Learning Model

Luna Pérez Troncoso

Introduction



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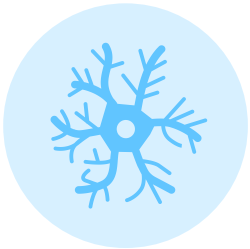
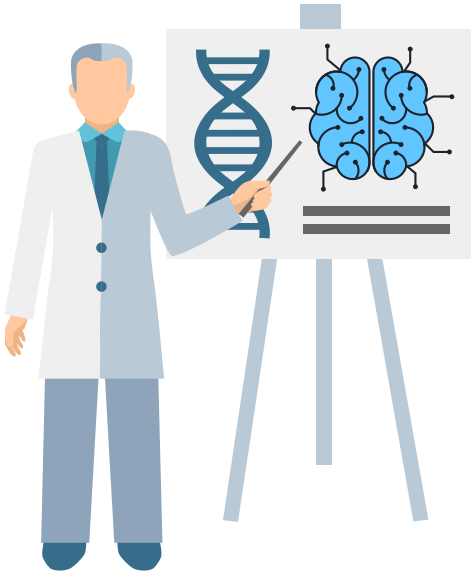
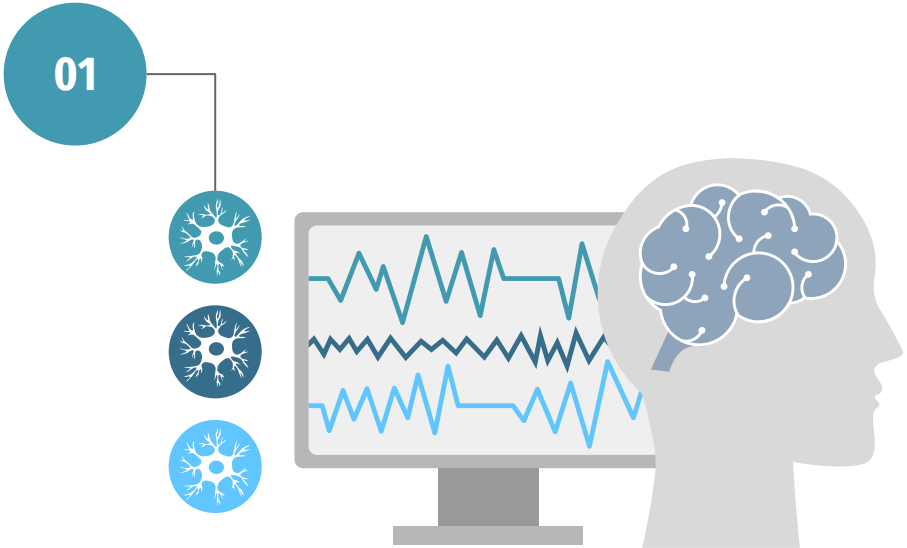


Early identification could allow for **timelier monitoring, lifestyle adjustments, and targeted therapeutic strategies** that may slow **disease progression or improve quality of life**.

Why develop a predictive model?

A reliable predictive system has the potential to **support clinicians in recognizing subtle signs that might otherwise go unnoticed**.





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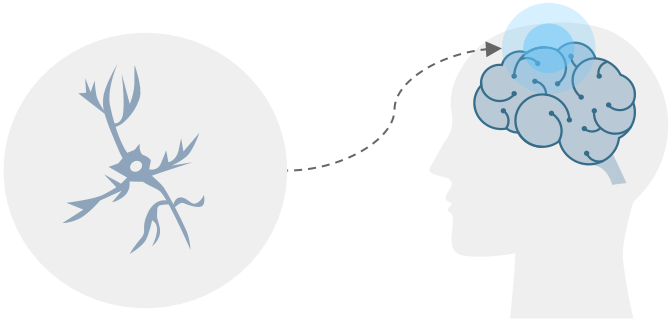

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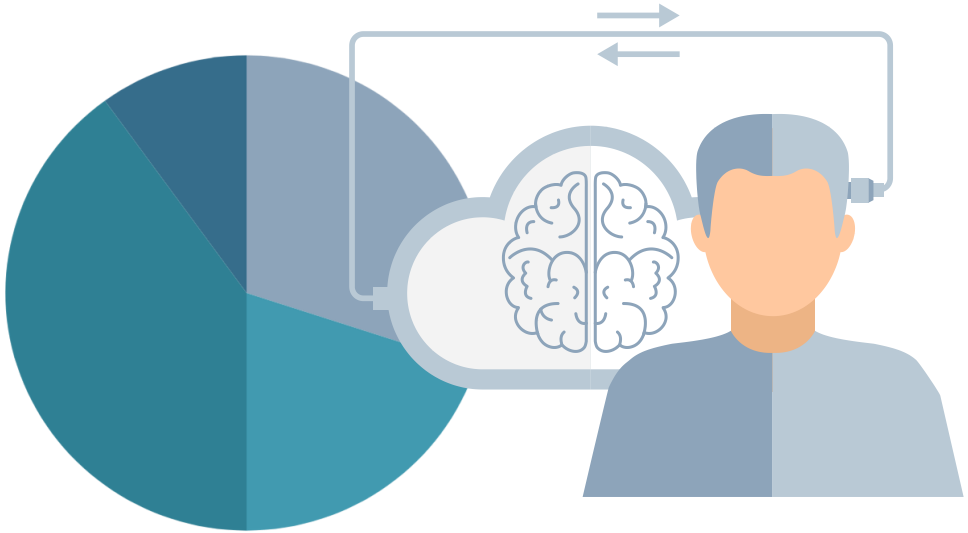
Predictive modeling can help researchers **gain deeper insight into the complex interactions that contribute to the onset of neurodegenerative disorders**

Beyond clinical impact, creating a predictive model encourages the integration of modern **data-driven approaches** into neurological healthcare, which stands out as a promising path to **more personalized and proactive patient care**.

Objective

Integrating diverse variables (demographic, lifestyle, clinical, cognitive, and symptom-related variables) into a unified predictive framework, the project seeks to **evaluate multiple machine learning algorithms and determine their capability to accurately identify patients at risk.**



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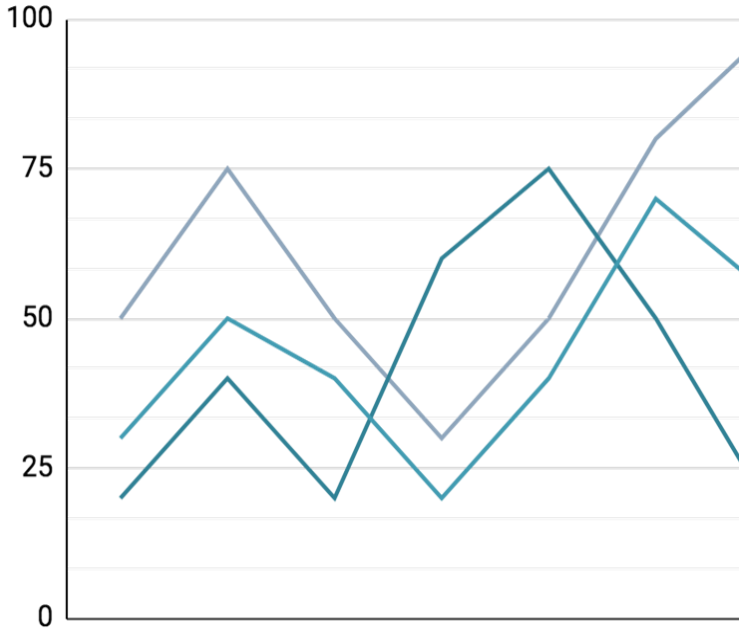

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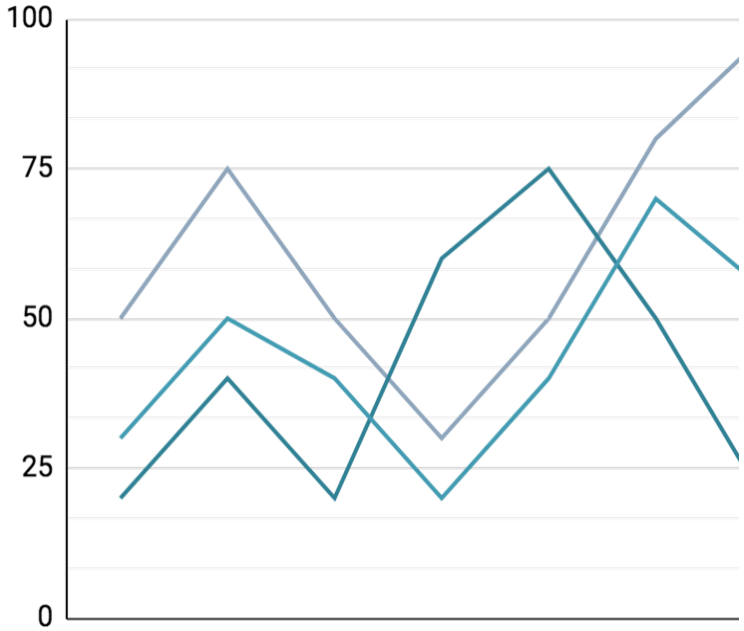

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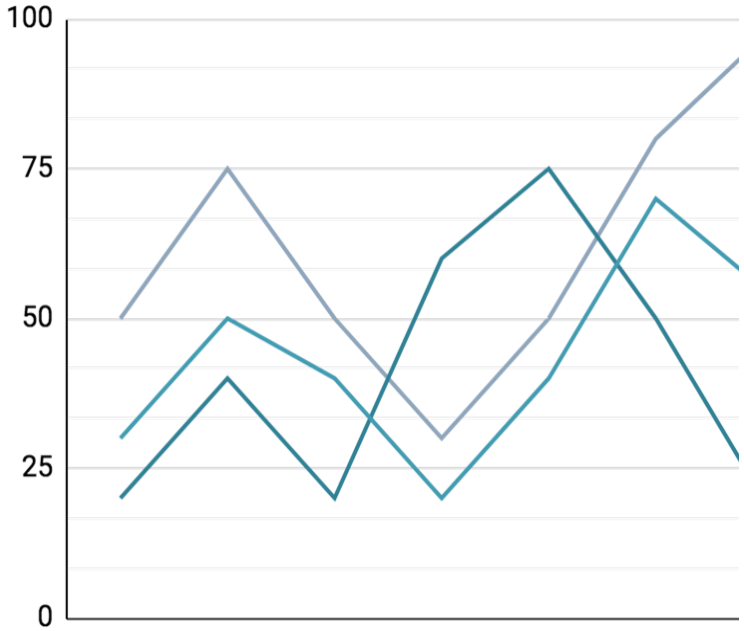

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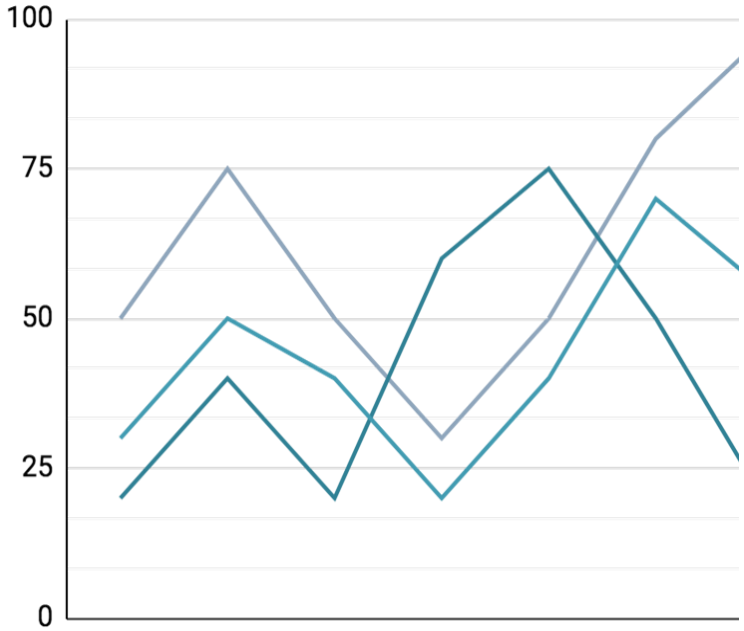

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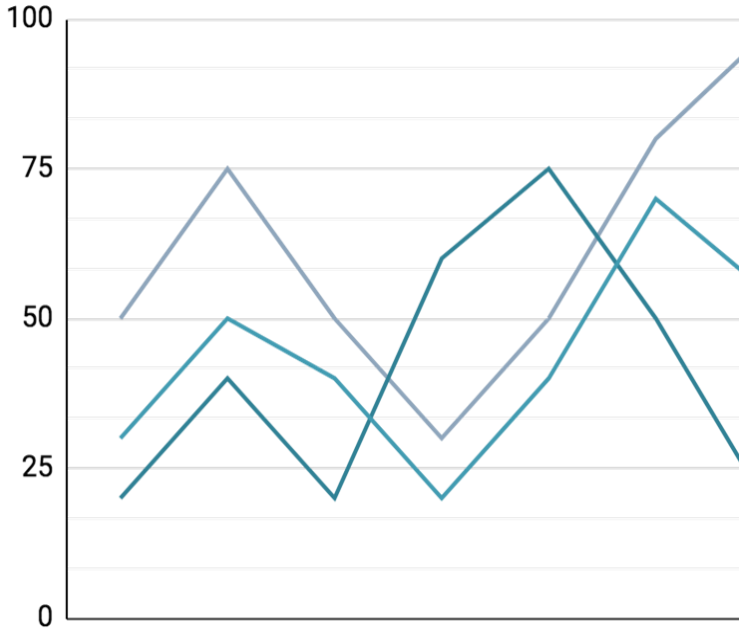

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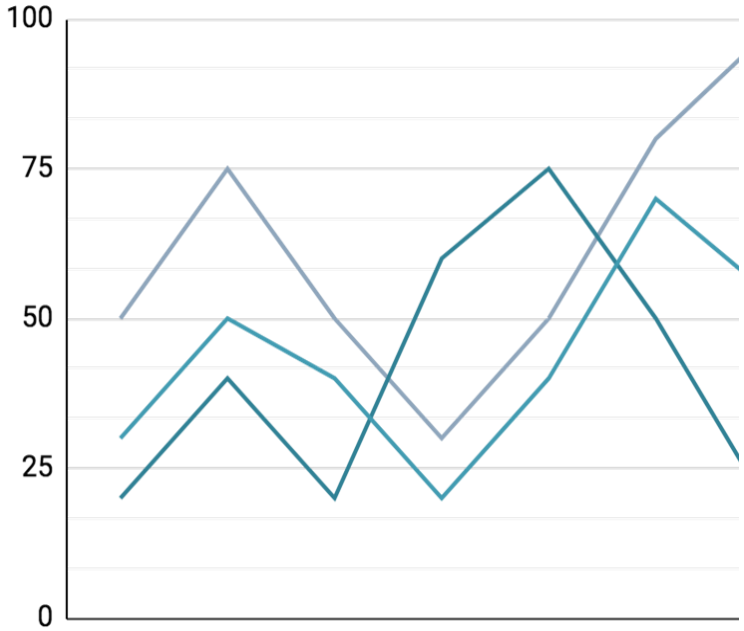

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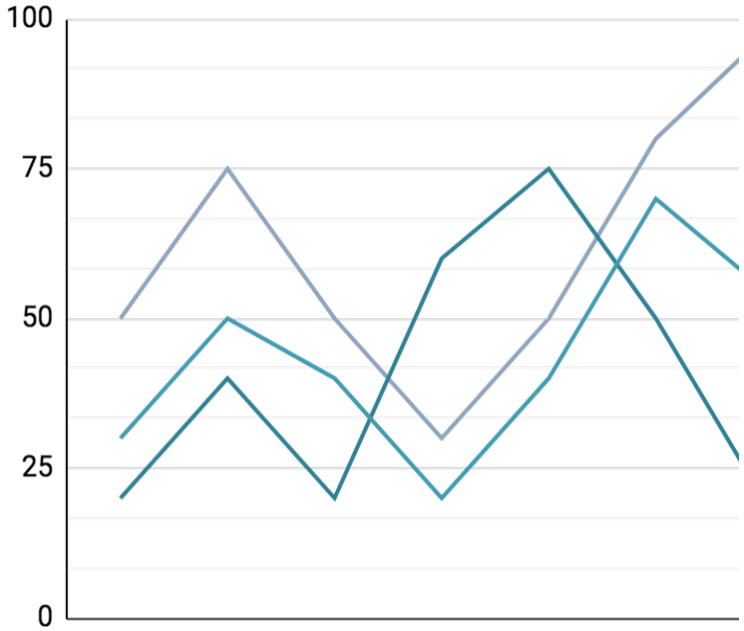

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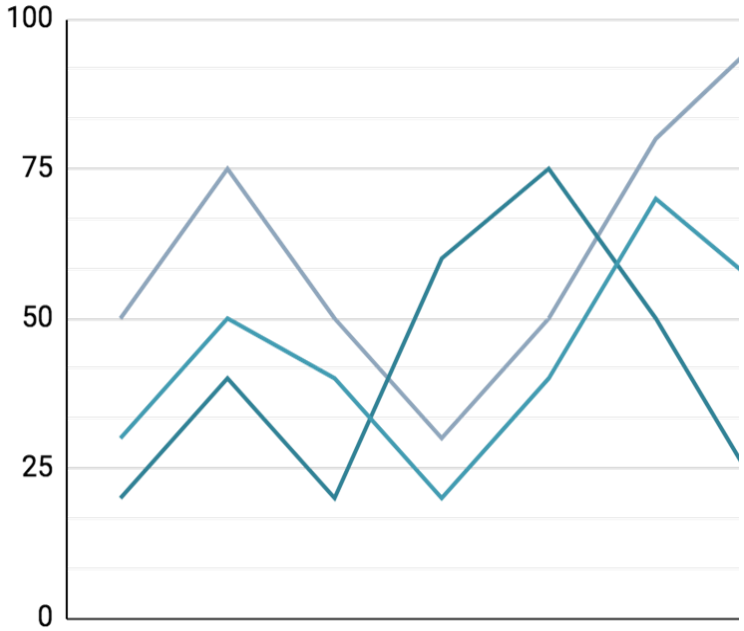

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- **Symptom indicators** (Tremor, Constipation, Rigidity).

RESULTS: Final Models

In this project **two reliable predictive models with subtle differences** were developed

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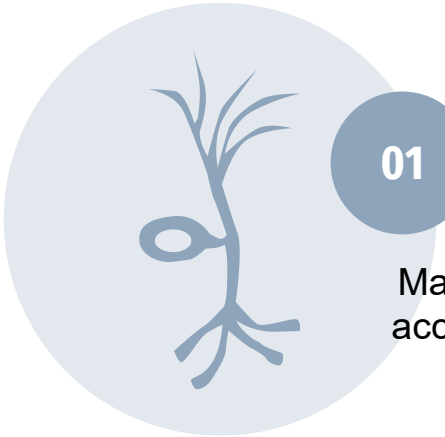

01

MODEL 1

Maximizes the accuracy score

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02 **MODEL 2**

Maximazes the sensitivity score

01 MODEL 1: Test Results

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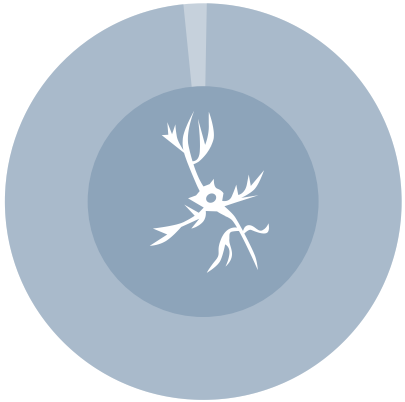

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This model predicted correctly 408 of 421 patients' diagnosis

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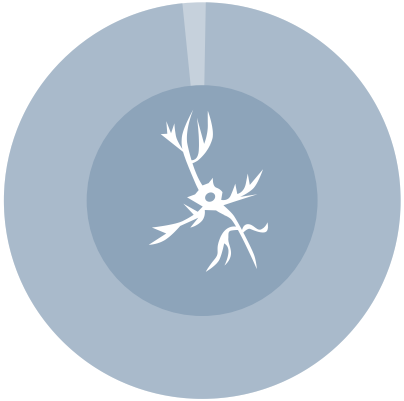

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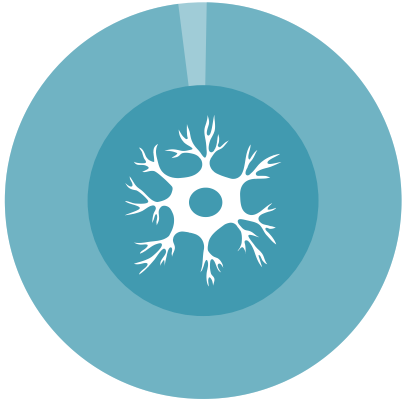

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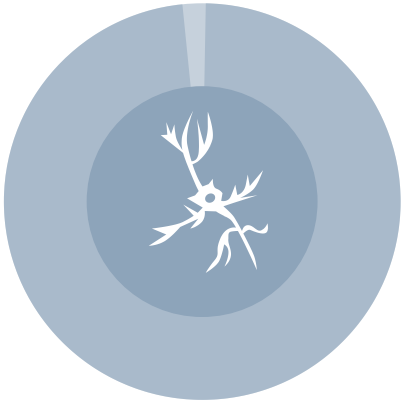

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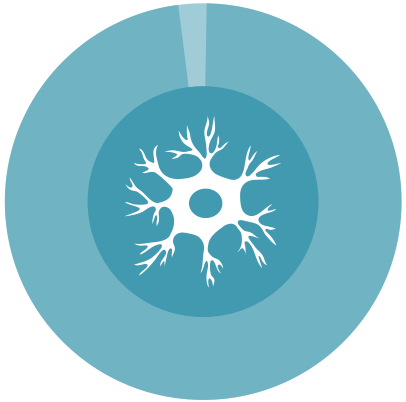

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02

MODEL 2: Test Results

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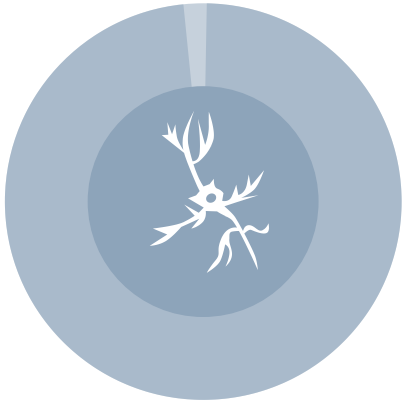

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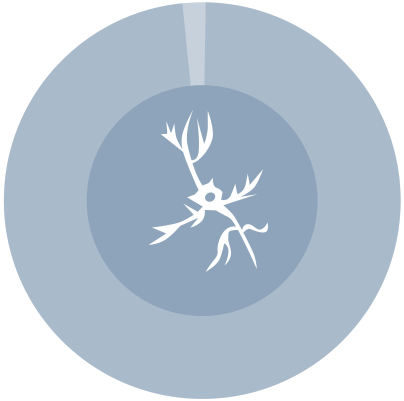

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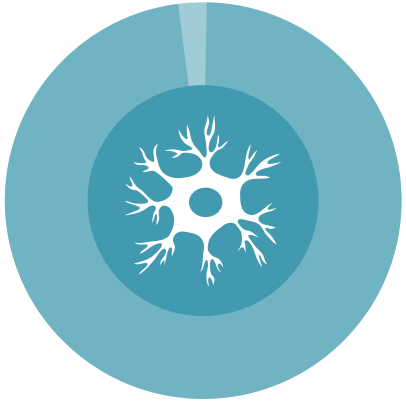

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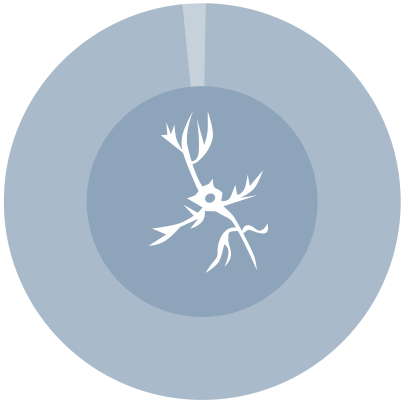

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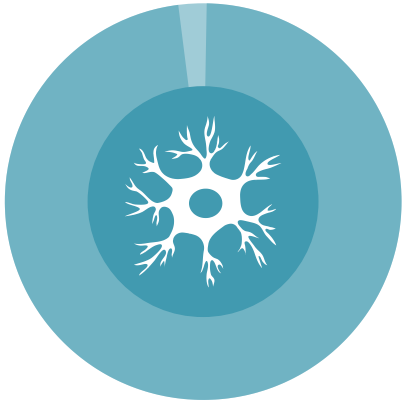

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Timely diagnosis will improve the **effectiveness of available therapeutic interventions**, **influencing patient outcomes and long-term quality of life**.

Strenghs and Limitations

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- Predictive models detected the majority of the Parkinson’s Disease Patients.
- Components of the model are scalable and fast-performing, allowing fast prediction of huge datasets in seconds.
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Limitations

- Although the models detected the majority of the Parkinson's Disease Patients, sometimes healthy patients are diagnosed with Parkinson's Disease.
- The model has not been tested in datasets with missing information.

THE BRIDGE

THANKS FOR YOUR ATTENTION

Github Repository

Streamlit Webpage