

Improving the Awareness and Diagnosis of Parkinson's Disease Using Computer-Aided Techniques



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INTRODUCTION

- Parkinson's disease is a progressive nervous system disorder that affects movement of the human body.
- Early diagnosis is very difficult, as most of its symptoms, are not unique to the disease.
- Symptoms include: tremors, rigidity, posture control and bradykinesia.
- The goal of this research is to create a diagnostic toolkit which would aid in early diagnosis of Parkinson's.



Figure 1 on the right illustrates the difference between the typical human brain and a PD brain.

METHODS

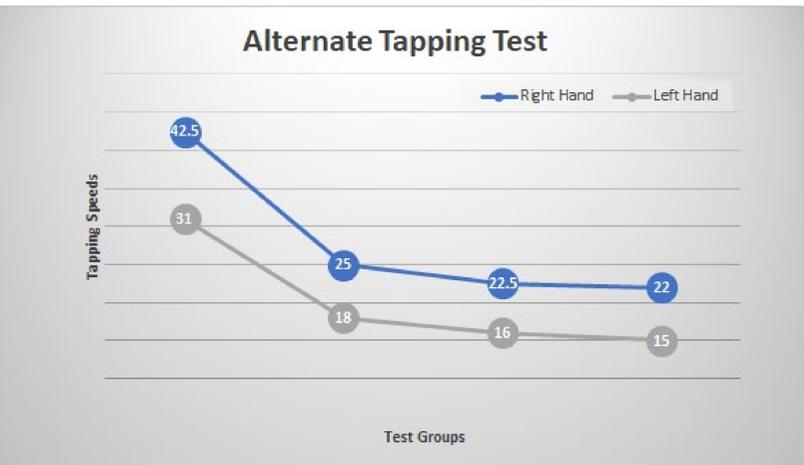


Figure 2 above shows a graph of the alternate tapping test comparing both hands.

- Our diagnostic toolkit will be in the form of an app which will test tapping rates
- Through the use of literature review, we determined the patient information needed for early diagnosis.
- We also determined what tests would be beneficial in early diagnosis of PD.

RESULTS

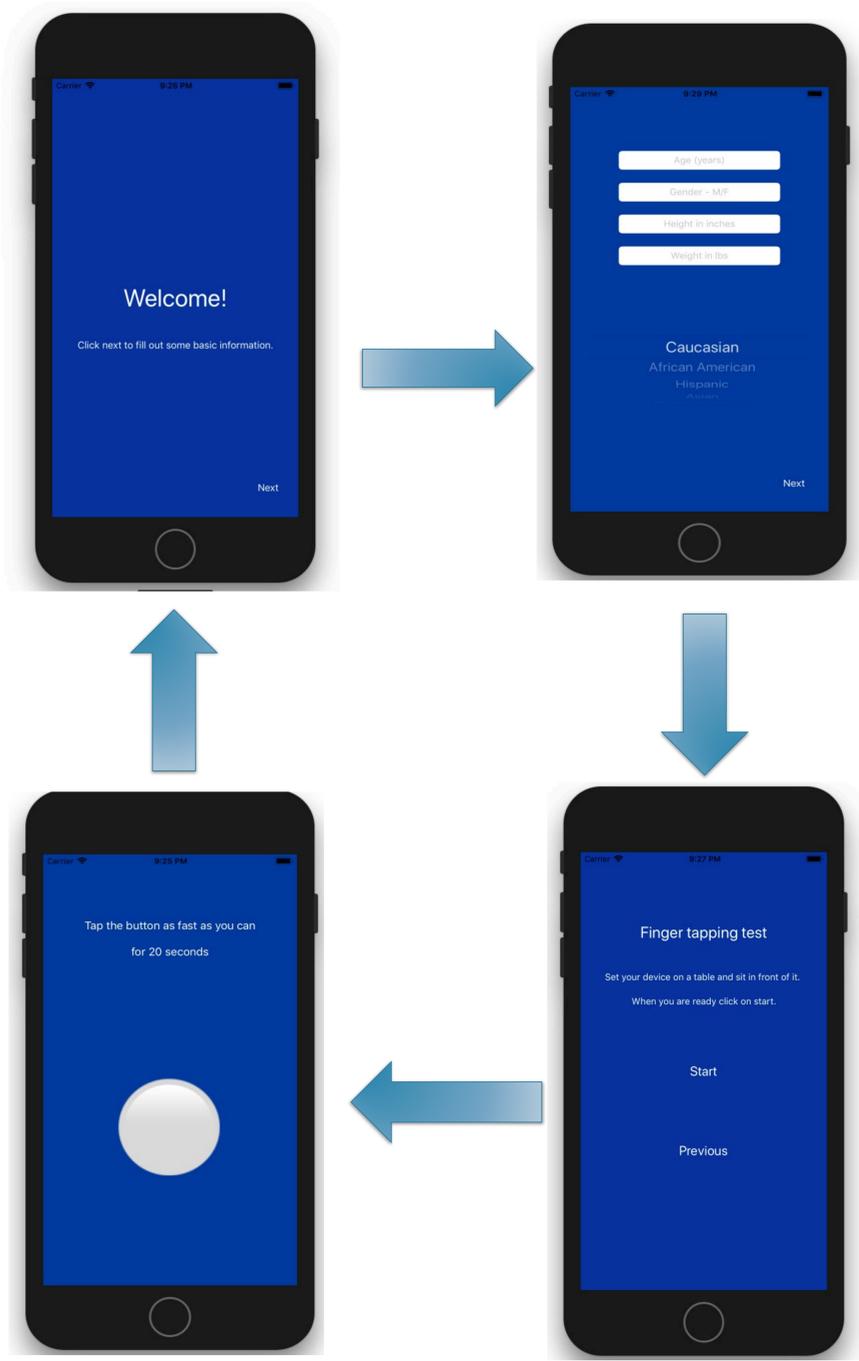


Figure 3 above shows each component of the PD app

- As seen above, we developed an application with the purpose of allowing an early diagnosis of Parkinson's outside a medical setting.
- This app was built using the Swift programming language.
- To determine the likelihood of PD, the app uses:
 - The demographics of the user
 - The tapping test

DISCUSSION

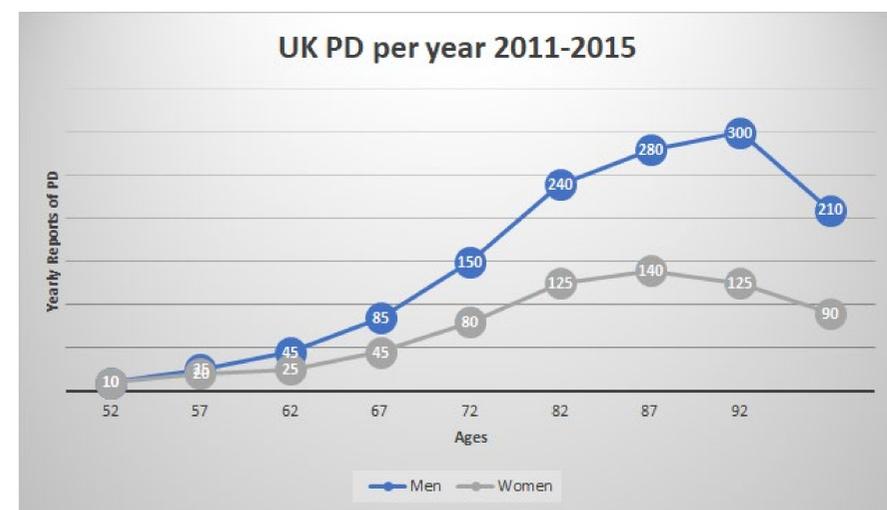


Figure 4 above compares the number of men and women diagnosed with PD each year, with men being more susceptible to it.

- This application has not been completely developed.
- It still requires a significant amount of testing and refining parameters before it could be used effectively.
- Our next step would be to test on PD patients.
- Some other tests that could be implemented include but are not limited to:
 - Handwriting tests
 - Tremor tests

CONCLUSION

- The goal of this project is to provide an efficient self diagnostic toolkit.
- We discovered that the symptoms are not unique to this disease alone, thereby making early diagnosis difficult.
- We were able to make great stride in this research as we developed the foundation of an easy to use self toolkit.
- We hope for more development in the near future.

REFERENCES

1. "Automatic and Objective Assessment of Alternating Tapping Performance in Parkinson's Disease." *mdpi.com*. 09 December. 2013.
2. "Early Treatment of Parkinson's Disease: Opportunities for Managed Care." *ajmc.com*.
3. "The incidence and prevalence of Parkinson's in the UK". December 2017.