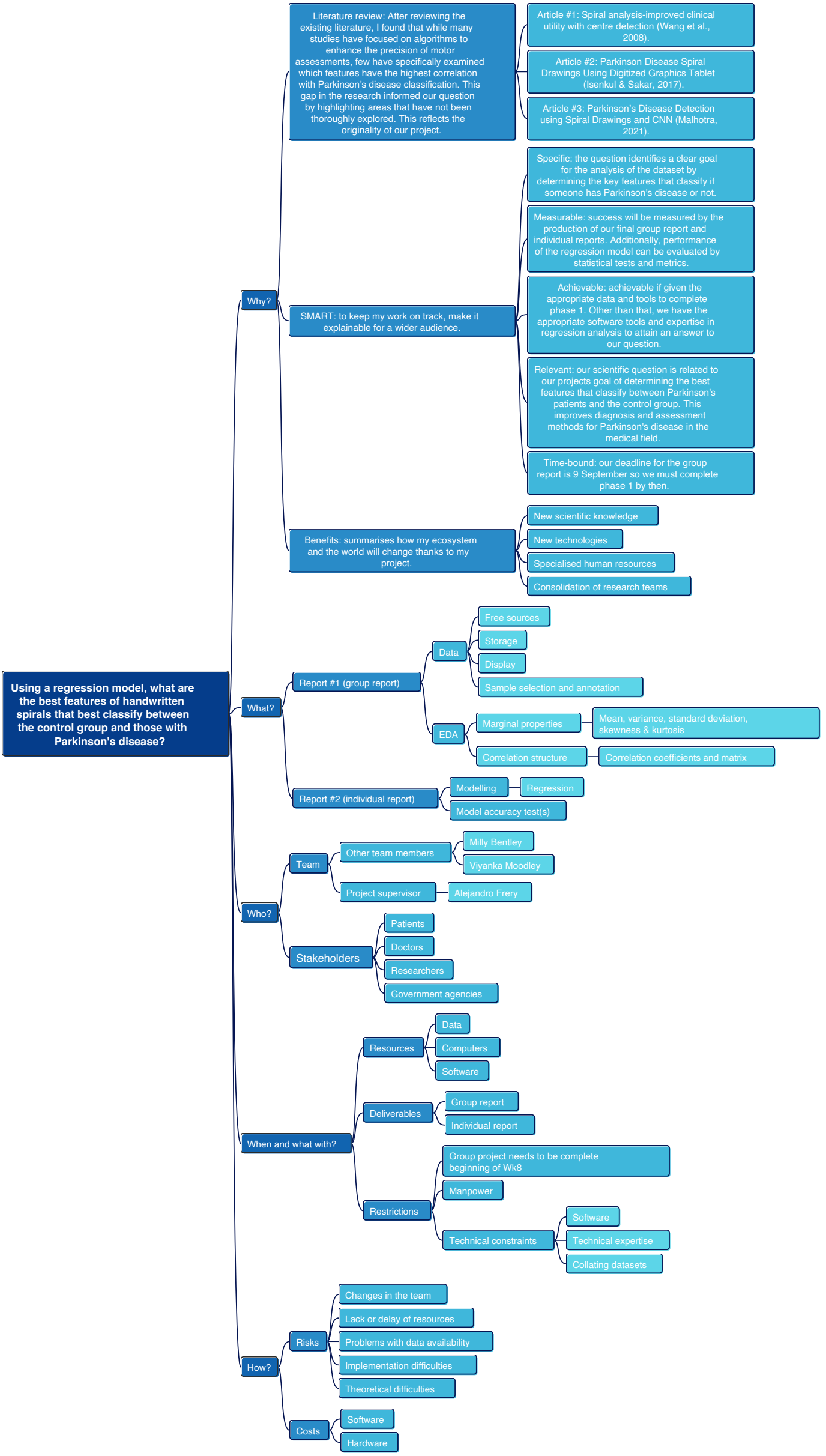
Using a regression model, what are the best features of handwritten spirals that best classify between the control group and those with Parkinson's disease?
Why?
Literature review: After reviewing the existing literature, I found that while many studies have focused on algorithms to enhance the precision of motor assessments, few have specifically examined which features have the highest correlation with Parkinson's disease classification. This gap in the research informed our question by highlighting areas that have not been thoroughly explored. This reflects the originality of our project.
Article #1: Spiral analysis-improved clinical utility with centre detection (Wang et al., 2008).
Article #2: Parkinson Disease Spiral Drawings Using Digitized Graphics Tablet (Isenkul & Sakar, 2017).
Article #3: Parkinson's Disease Detection using Spiral Drawings and CNN (Malhotra, 2021).
SMART: to keep my work on track, make it explainable for a wider audience.
Specific: the question identifies a clear goal for the analysis of the dataset by determining the key features that classify if someone has Parkinson's disease or not.
Measurable: success will be measured by the production of our final group report and individual reports. Additionally, performance of the regression model can be evaluated by statistical tests and metrics.
Achievable: achievable if given the appropriate data and tools to complete phase 1. Other than that, we have the appropriate software tools and expertise in regression analysis to attain an answer to our question.
Relevant: our scientific question is related to our projects goal of determining the best features that classify between Parkinson's patients and the control group. This improves diagnosis and assessment methods for Parkinson's disease in the medical field.
Time-bound: our deadline for the group report is 9 September so we must complete phase 1 by then.
Benefits: summarises how my ecosystem and the world will change thanks to my project.
New scientific knowledge
New technologies
Specialised human resources
Consolidation of research teams
What?
Report #1 (group report)
Data
Free sources
Storage
Display
Sample selection and annotation
EDA
Marginal properties
Mean, variance, standard deviation, skewness & kurtosis
Correlation structure
Correlation coefficients and matrix
Report #2 (individual report)
Modelling
Regression
Model accuracy test(s)
Who?
Team
Other team members
Milly Bentley
Viyanka Moodley
Project supervisor
Alejandro Frery
Stakeholders
Patients
Doctors
Researchers
Government agencies
When and what with?
Resources
Data
Computers
Software
Deliverables
Group report
Individual report
Restrictions
Group project needs to be complete beginning of Wk8
Manpower
Technical constraints
Software
Technical expertise
Collating datasets
How?
Risks
Changes in the team
Lack or delay of resources
Problems with data availability
Implementation difficulties
Theoretical difficulties
Costs
Software
Hardware

Isabelle Southon, 300597453
DATA301 Assignment 2: Part 1

Discuss where the mind map came from and what you will do with it

The final mind map came from discussions in my project group, where we collaboratively used our ideas to create a mind map. Originally, we worked on the mind map by ourselves. However, we then realised at one of our frequent meetings where we shared our progress and difficulties that the first step in creating our mind map was designing a scientific question related to the spirals dataset that met the SMART (specific, measurable, achievable, relevant, & time-bound) criteria. Therefore, the same question for the same dataset was likely to result in the same or a similar mind map. As a result of this, we decided to work collaboratively on the mind map, especially because at the beginning it seemed challenging. In addition to developing an original question, the process is also feasible because we have the resources to produce the expected output, it is traceable as intermediate deliverables are the reports, and it is auditable because we can track the steps that led us to the outcome. As a group, we drafted a few questions that were inspired by the example given in Alejandro's lecture notes. We then refined the question as it is the fundamental part of our mind map. Each node's purpose is to provide information about the materials and process necessary to analyse the best features that can classify between patients with Parkinson's disease and the control group using a regression model. To create the mind map, we used the application Freeplane.

The mind map that we have created provides a visual and structured way to organise our ideas and information regarding our scientific question relevant to the spirals dataset. It categorizes the aspects relevant and needed for the project, to set us up toward completing our group report at the beginning of week 8. The mind map also highlights the key deliverable being the individual project, as this is another important deadline to be mindful of. The mind map can be utilised to ensure alignment with project objectives. For example, one of the project objectives is to experience working as a team towards a shared objective. Our shared objective is to create a final group report answering the scientific question we have developed. At our frequent meetings, we can use the mind map to track progress by looking at it as a group each week and evaluating whether we are progressing or whether we need to change anything. This reflects how the mind map can be used to meet the project's objective of working in a team. Additional project objectives are to apply our knowledge to answer specific questions based on the spirals dataset and demonstrate the ability to communicate findings. The mind map can be used to meet these objectives as it is based on a question related to the spirals dataset and outlines how and who we need to communicate findings to. The mind map will be used to break down tasks and set clear goals, which will ensure that all team members understand the scope of the project. Additionally, if others want to know what we have done to produce our final report, giving them our mind map may be a good starting point to show them.