

MATH4021 Feedback sheet for the final report of Ka Leuk Hui (20490457)

Supervisor: Yordan Raykov

Mathematical execution

The mathematical execution of the project was very high for a Master's level project. The student has presented independent work making a small contribution towards evaluating different regression and smoothing techniques for non-Euclidean manifolds. The technical background which the student demonstrated set him at the top of his class with evidence for a lot of independent reading.

Introduction and Written Presentation

The introduction section is good but somewhat minimalistic and could benefit from providing context of the challenges associated with the undertaken project. It does highlight the aim and overview of the work as well as the structure. It is missing details regarding the background of the project though. The intro starts too generally, and lacks refs and detail; it doesn't really give a gist of what unrolling/unwrapping actually are. It does have a good structure-of-report para and explanation of what the code does and where it can be found. The main body significantly improves with good specialization to the sphere case. Some fairly heavy geometric terminology/notation, but good specialisation to the sphere. Slightly light on referencing. Schematic diagrams appear to be the student's own work and illustrate good understanding. Some explanations definitely could be improved such as the special properties of the exponential map.

Student's initiative

The student has shown exceptional level of initiative and independent work. We have had many stimulating discussion where original examples were proposed by the student, conclusions were formulated independently and the student presented personal viewpoints.

General comments

The results presented are all backed with google Collab code, large parts of which is not simple use of package code but demonstrates deeper understanding of the student regarding the covered methodologies. Good use appears to have been made of Python and relevant libraries to implement the various calculations, which included fitting and forecasting for both spline and GP regression. Results are appropriately substantial for a strong MSc dissertation.

