COSC 6364 – Advanced Numerical Analysis

Final Project - DERIV2D

2D Function Gradient and Directional Derivative

By: Hai-Y Michael Tran Nguyen

Peoplesoft: 0925358

Date: 5/10/18

# Introduction

The goal of this project is to extract derivatives and gradients of multidimensional functions and compare them. Specifically, we will numerically calculate the directional derivative of a function A and compare it to another function B (which is already the derivative). In this project, we will be doing this on 2D functions.

## Function Graphs

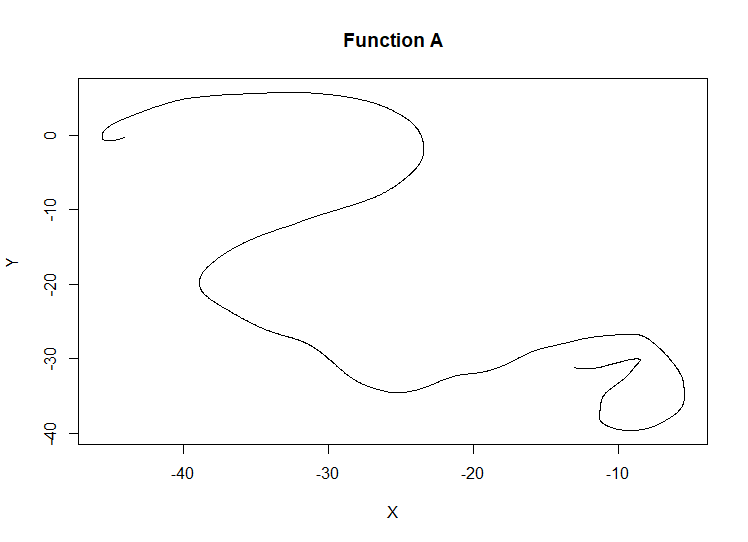


Figure 1 - Function A

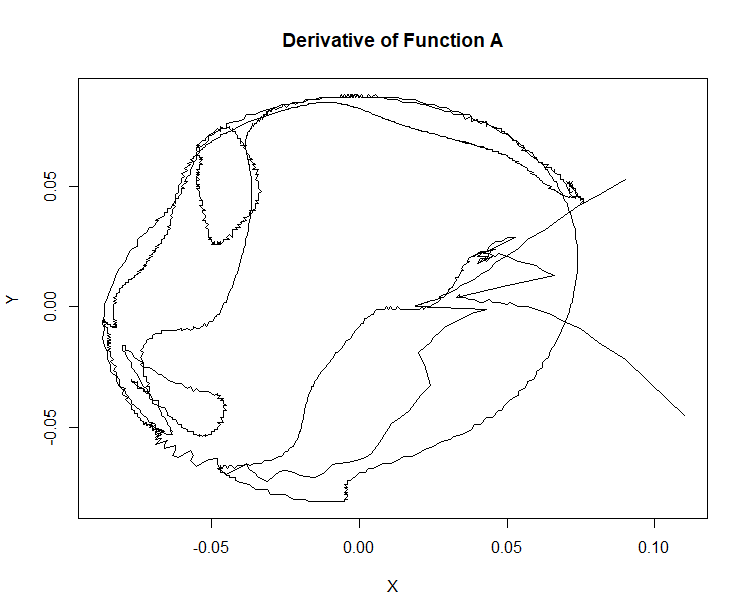


Figure 2 - Derivative of Function A

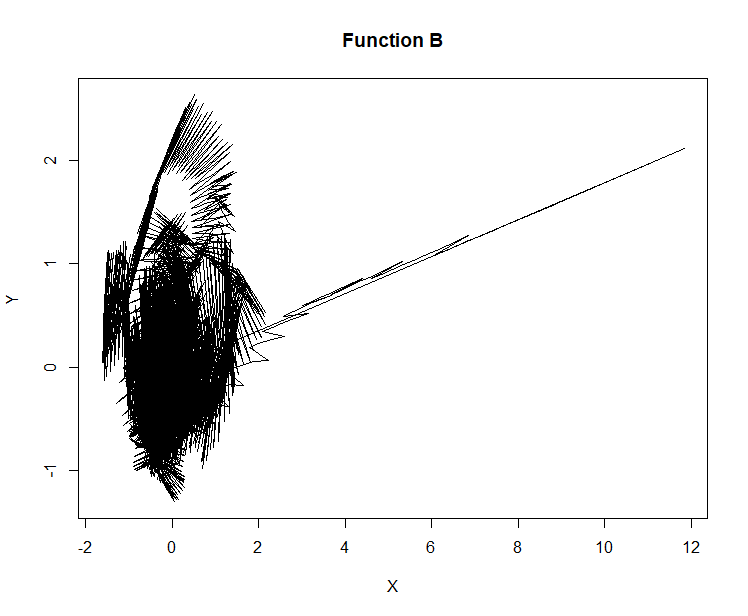


Figure 3 - Function B

## Technologies Used

### C# (MS Visual Studio 2018)

Part of this project was developed in C# using Microsoft Visual Studio 2018. This part mainly deals with calculating the derivative and generating and outputting the raw data used for comparison.

### R (R Studio)

Another part of this project was developed in R using R Studio. This part mainly deals with using the raw data generated from the previous part (C#) and running comparisons against them and generating the graphs and plots in this report.

# Methods

# Results

# Conclusions

# References

# Source Code