

Research Outline

Ryan Greenup & James Guerra

August 12, 2020

Contents

1	Give a brief Sketch of the project	1
1.1	Topic / Context	1
1.2	Motivation	1
1.3	Basic Ideas	1
1.4	Where are the Mathematics	2
1.5	Don't Forget we need a talk	2
1.5.1	Slides In Org Mode	2
2	What we're looking for	2

code /home/ryan/Dropbox/Studies/QuantProject/Current/Python-Quant/ & disown

Here's what I gathered from the week 3 slides

1 Give a brief Sketch of the project

1.1 Topic / Context

1.2 Motivation

1.3 Basic Ideas

- Look at FOSS CAS Systems
 - Python (SymPy)
 - Julia
 - * SymPy integration
 - * symEngine

- * Reduce.jl
- * Symata.jl

- Maybe look at interactive sessions:
 - Like Jupyter
 - Hydrogen
 - TeXmacs
 - org-mode?

After getting an overview of SymPy let's look at problems that are interesting (chaos, morphogenesis and order from disarray etc.)

1.4 Where are the Mathematics

- Trying to look at the algorithms underlying functions in Python/Sympy and other Computer algebra tools such as Maxima, Maple, Mathematica, Sage, GAP and Xcas/Giac, Yacas, Symata.jl, Reduce.jl, SymEngine.jl
 - For Example Recursive Relations
 - Look at solving some problems related to chaos theory maybe
 - Mandelbrot and Julia Sets
 - Look at solving some problems related to Fourier Transforms maybe
- AVOID DETAILS, JUST SKETCH THE PROJECT OUT.

1.5 Don't Forget we need a talk

1.5.1 Slides In Org Mode

- Without Beamer
- With Beamer

2 What we're looking for

- Would a reader know what the project is about?
- Would a reader become interested in the upcoming report?
- Is it brief but well prepared?
- Are the major parts or phases sketched out