ProgTeach: Programming Community of Practice

JAMES SLACK, ARETI MANATAKI, ALISDAIR TULLO AND GERGANA DASKALOVA

Noteable and ProgTeach: A Whistle Stop Tour

JAMES SLACK

ProgTeach

ProgTeach

- Community based around computational teaching
- Sharing good practice
- Showcase new and supported technologies

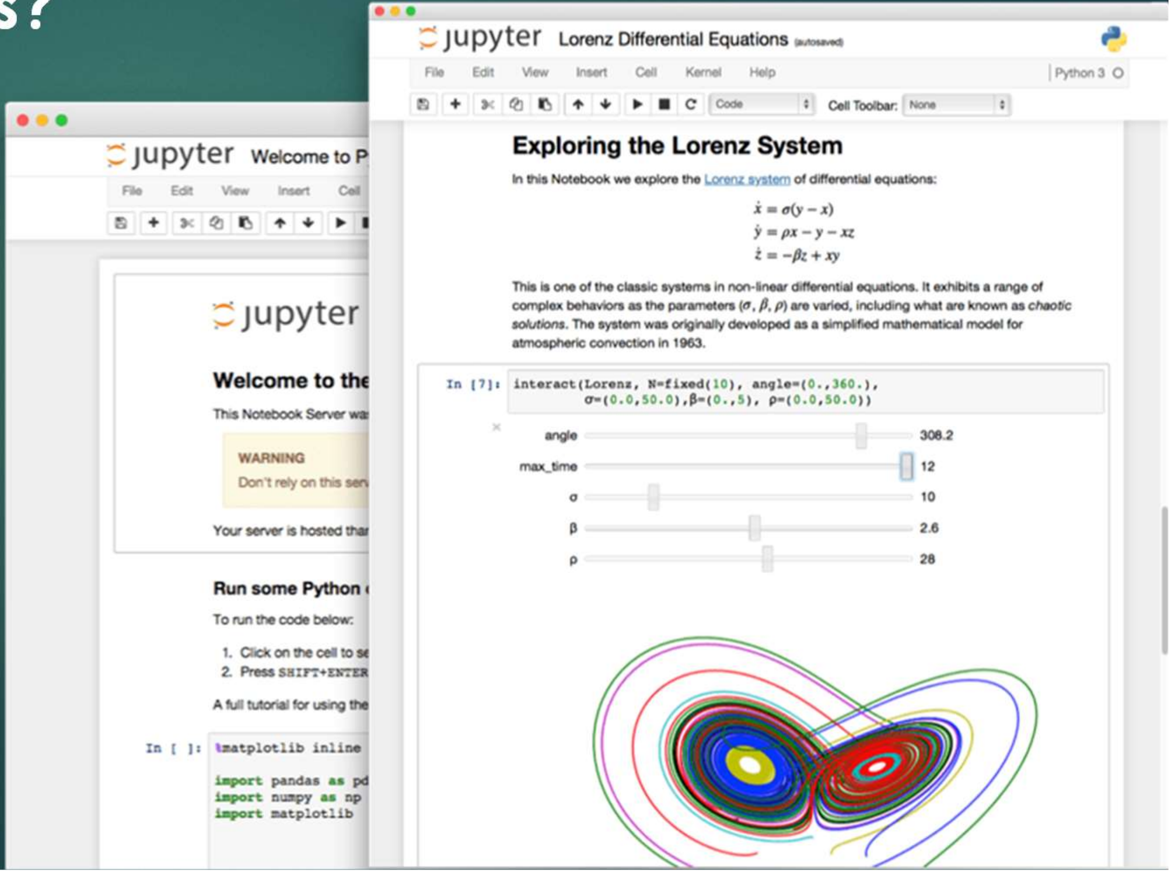
What is Noteable?

Service Description

"The Noteable service is a cloud based platform providing access to Jupyter notebooks online. Noteable provides a central storage space to store and run Jupyter notebooks in a variety of programming languages"

What
are Jupyter notebooks?

- ▶Computational notebook
- ▶Multi-language support
- ▶Open Source
- ▶https://jupyter.org/



Welcome to the

This Notebook Server wa

WARNING

Don't rely on this serv

Your server is hosted tha

Run some Python

To run the code below:

1. Click on the cell to se
2. Press SHIFT+ENTER

A full tutorial for using the

```
In [ ]: %matplotlib inline

        import pandas as pd
        import numpy as np
        import matplotlib
```

Exploring the Lorenz System

In this Notebook we explore the Lorenz system of differential equations:

$$\dot{x} = \sigma(y - x)$$
$$\dot{y} = \rho x - y - xz$$
$$\dot{z} = -\beta z + xy$$

This is one of the classic systems in non-linear differential equations. It exhibits a range of complex behaviors as the parameters (σ, β, ρ) are varied, including what are known as *chaotic solutions*. The system was originally developed as a simplified mathematical model for atmospheric convection in 1963.

```
In [7]: interact(Lorenz, N=fixed(10), angle=(0.,360.),
             σ=(0.0,50.0),β=(0.,5), ρ=(0.0,50.0))
```

angle	308.2
max_time	12
σ	10
β	2.6
ρ	28

Why use Jupyter?

- Able to provide context alongside live code
- Can create visualisations, data tables, embed media and work with remote data sets
- Not as daunting as Terminal or IDE
- Great for introductions to new students

How to access?

Local Install

Jupyterhub

Created by Ananth
from Noun Project

Created by AlePio
from Noun Project

Introducing...

Why Noteable?

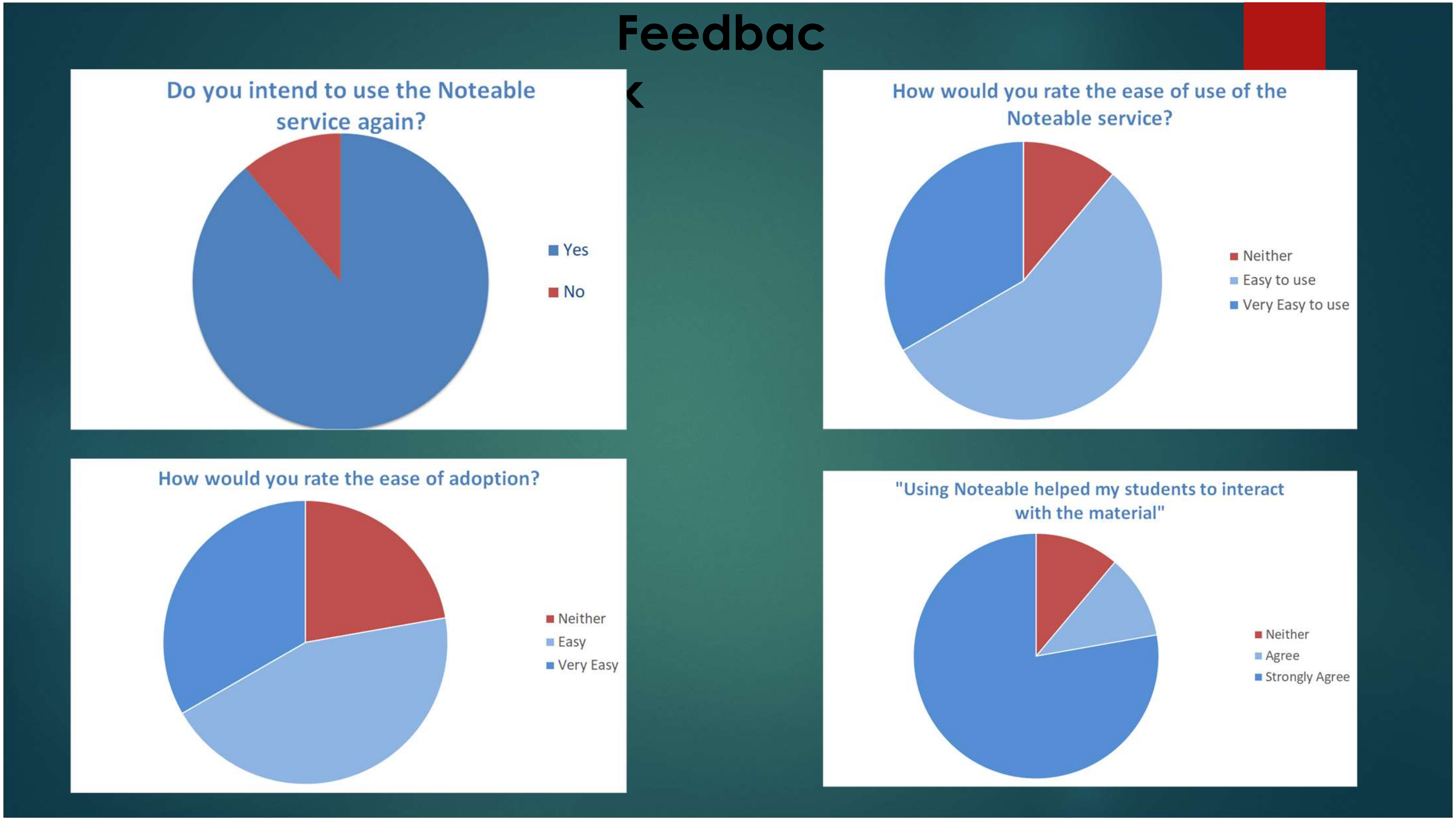
- Central service supported by EDINA
- Learn integration
- Supporting teaching use case across University

Noteable Pilot – Semester 1

- >600 users
- 6 different Schools
- Alternative use for training
- Benchmarking service against market

Noteable Pilot – Semester 2

- >500 users in 4 schools
- nbgrader implementation
- First round of feedback
- Case studies ongoing



Feedback

Do you intend to use the Noteable service again?

How would you rate the ease of use of the Noteable service?

How would you rate the ease of adoption?

"Using Noteable helped my students to interact with the material"

Get involved

- Get in touch to trial Noteable
- Use Noteable in your classes or training
- Looking for Jupyter for Research users
- Share practice with others

CodeRunner

Group Discussions

- In your groups spend 10 minutes discussing what the ideal programming class would be in relation to each of the following topics:
  - Technology/Tools
  - Assessments
  - Space/Room
  - Method/Material
  - Different Skill Levels
  - Outside of class

Technology and Tools

- What tools or platforms do you use
  - Are these language specific
  - Do these add barriers, students need to learn how to use
- Do you use tools or platforms that are not related to coding but help e.g. discussion boards
- What tools or platforms would you like to see supported at the University

Assessments

- Do you use specific tools for assessment
- Do you set regular formative assessments
- What kind of feedback do you give
- Do you make use of peer-reviewing
- Are your assessment entirely code based or theory based
- Do you set assignments

Space/Room/Time

- What is the best/ideal space for you to use and why
- Are you limited by access to resources I.e. machine with specific software
- What is the ideal length of session

Method and Material

- What type of session do you believe is best
- Would you encourage students to follow along or work at their own pace
- Do you encourage group work or peer learning
- Do you focus on theory first
- When do you introduce code

Dealing with different skill levels

- How do you deal with teaching an audience of different skills levels
- Do you encourage advanced students to help
- Do you set activities/challenges for those further ahead

Outside of Class

- What work do you set outside of the class
- Do you set group work
- Do you have information students access before the sessions
- What ratio is this compared to in class work