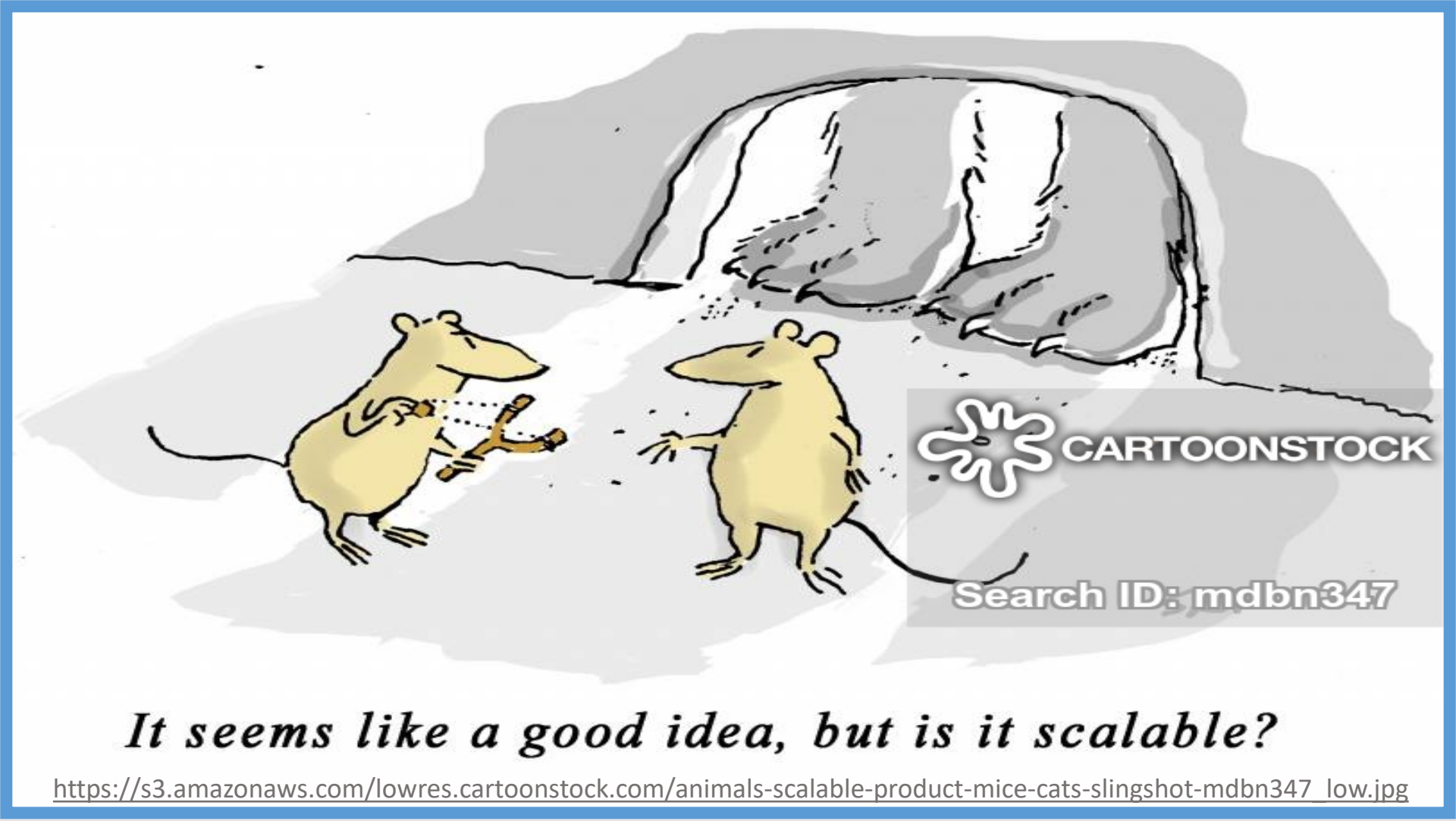


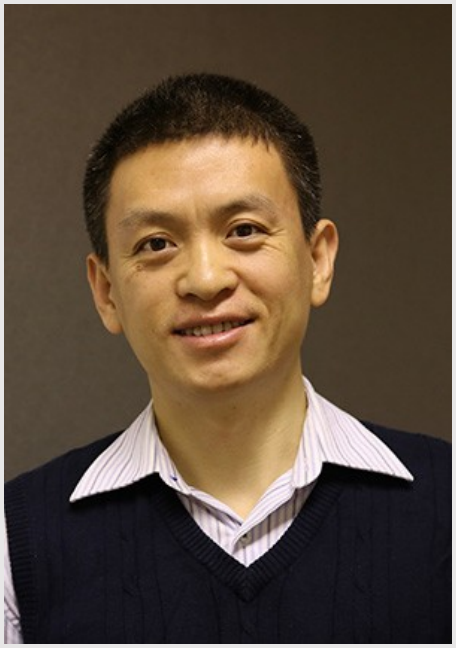

https://s3.amazonaws.com/lowres.cartoonstock.com/animals-scalable-product-mice-cats-slingshot-mdbn347_low.jpg

# COM6012: **Scalable** Machine Learning - Spring 2021

https://github.com/haipinglu/ScalableML (Since 2019)

The University of Sheffield

# Two lecturers

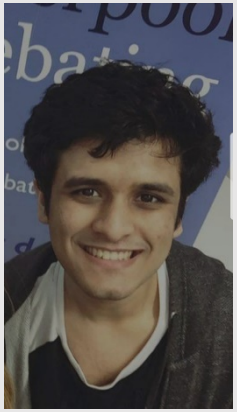


Haiping Lu

**Module leader**

Mauricio A. Álvarez

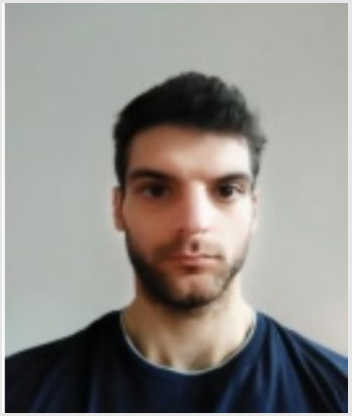
# Four demonstrators (TAs)



Areeb Sherwani

**Head**

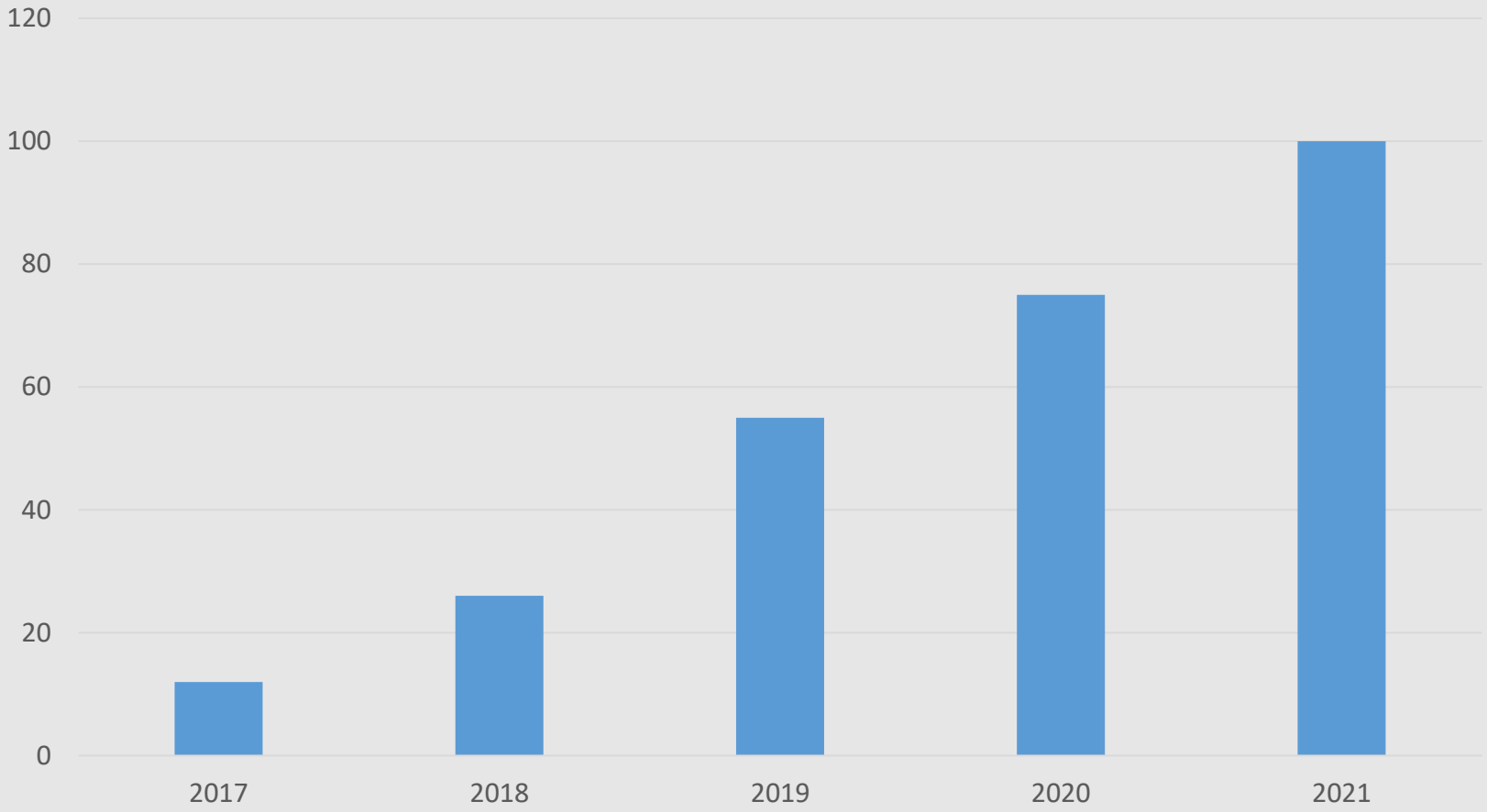
Mr Mario Alejandro Hevia Fajardo



Michail Mamalakis

Mingjie Chen

# Number of registered students



# Materials, expectations, & interactions

- **Monday 9am**: each week's materials are available in Blackboard/GitHub including video lectures, slides, and Jupyter notebooks (https://github.com/haipinglu/ScalableML)
  - From week 2, lab exercise reference solution available on Monday
- **Tuesday 5pm**: you are expected to have
  - completed studying the lecture video and slide
  - started working on the lab with problems encountered, if any
- **Wednesday 9-10am**: on-line session with the lecturer
  - Blackboard Collaborate
  - **Lab demos**, question answering, problem solving, material review
  - Get your question ready before the session starts
- **Thursday 5pm**: you are expected to have completed the lab
- **Friday 10-11am:** on-line session with the lecturer
  - Additional help sessions via Blackboard Collaborate

# Additional (optional) interactions

- Online help-desk sessions with the demonstrators
  - Week 1-9: 2-4pm on Wednesdays & 9-11am on Thursdays
- Face-to-face sessions with a demonstrator
  - No during lockdown, wait for further announcement
- Discussion board to post your questions and get answered by the lecturer
  - General forum: general question & feedback
  - Lecture & lab forums: two, first half + second half
    - To ask for clarification on related lecture/lab contents
  - Assignment forums: two, one for each assignment
    - To ask for clarification on assignment questions
    - NOT to ask the correctness of a specific solution, share a possible solution, or ask **how** to solve the problems. It is an **assessment**.
- Direct email for personal/private issues

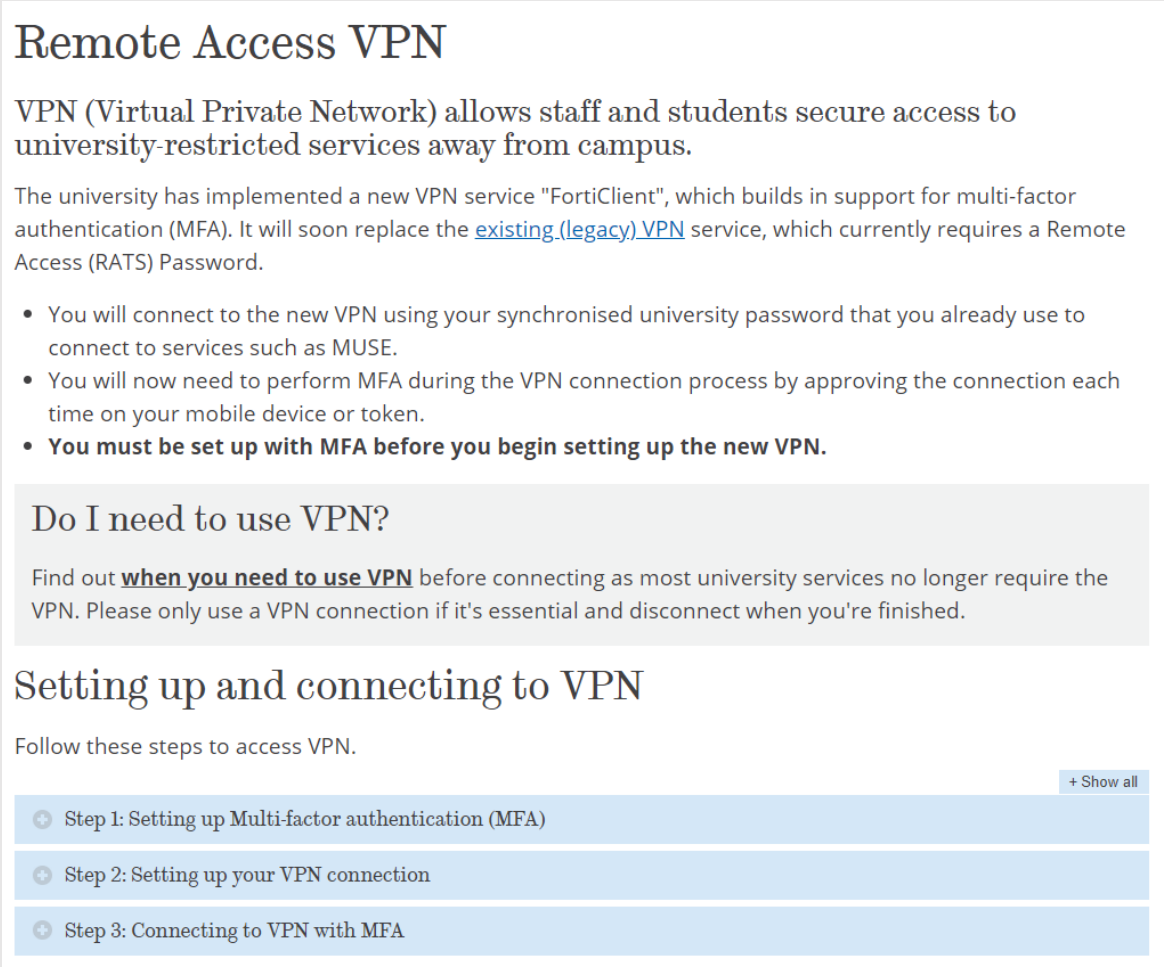
# Assessment ( 2 + 2)

| # | Assessment | Release | Due | Mark (total: 100) |
|---|---|---|---|---|
| 1 | Blackboard Quiz 1 | 25 Feb 6pm | 26 Feb 6pm | 20 |
| 2 | Assignment 1 | 26 Feb 11am | 12 Mar 11am | 30 |
| 3 | Blackboard Quiz 2 | 25 Mar 11am | 26 Mar 11am | 20 |
| 4 | Assignment 2 | 27 Mar 11am | 30 Apr 11am | 30 |

- Marking and feedback (from Student Handbook)
  - Quiz: 1 working week
  - Assignment: 3 working weeks

# VPN is **necessary** for assessment (HPC)

- See the official guide at https://www.sheffield.ac.uk/it-services/vpn



## Remote Access VPN

VPN (Virtual Private Network) allows staff and students secure access to university-restricted services away from campus.

The university has implemented a new VPN service "FortiClient", which builds in support for multi-factor authentication (MFA). It will soon replace the existing (legacy) VPN service, which currently requires a Remote Access (RATS) Password.

- You will connect to the new VPN using your synchronised university password that you already use to connect to services such as MUSE.
- You will now need to perform MFA during the VPN connection process by approving the connection each time on your mobile device or token.
- **You must be set up with MFA before you begin setting up the new VPN.**

### Do I need to use VPN?

Find out **when you need to use VPN** before connecting as most university services no longer require the VPN. Please only use a VPN connection if it's essential and disconnect when you're finished.

### Setting up and connecting to VPN

Follow these steps to access VPN.

+ Show all

- Step 1: Setting up Multi-factor authentication (MFA)
- Step 2: Setting up your VPN connection
- Step 3: Connecting to VPN with MFA

# More **hands-on** content

| Wk | Date | Topic | Lecturer |
|---|---|---|---|
| 1 | 08 Feb | Introduction to Spark and HPC | Haiping |
| 2 | 15 Feb | RDD, DataFrame, ML pipeline, & parallelization | |
| 3 | 22 Feb | Scalable matrix fact. for collaborative filtering (RecSys) | |
| 4 | 01 Mar | Scalable K-means clustering | |
| 5 | 08 Mar | Scalable PCA for dimensionality reduction | |
| 6 | 15 Mar | Scalable decision trees | Mauricio |
| 7 | 22 Mar | Scalable logistic regression | |
| 8 | 19 Apr | Scalable generalized linear models | |
| 9 | 26 Apr | Scalable neural networks | |
| 10 | 03 May | Apache Spark in the Cloud (guest lecturer: Mike Smith) | |