2021 Fast.ai Community Course

QUEENSLAND AI HUB

QUEENSLAND AI

Who are we?

QUEENSLAND HUB

Queensland AI Hub - The Queensland AI Hub is connecting Queensland's artificial intelligence (AI) ecosystem through strategy, awareness and education. Link: qldaihub.com

QUEENSLAND AI

Queensland AI Meetup: Brisbane-based Machine Learning and AI group, established in 2017. Monthly meetups, and ran a fast.ai course a couple years back. Link:meetup.com/Queensland_AI

fast.ai

Fast.ai - Founded by Jeremy & Rachel Howard, and the basis of the course which we'll be working with. Link: fast.ai

The 2021 Queensland AI Hub Community Course

- 10 weeks of course lessons designed to walk students through the fast.ai Practical Deep Learning for Coders course
- 40 in-person students (in Brisbane), 700+ online
- 10 mentors will help students through the course week by week
- Discussion and coordination via Discord
- Group Projects during the course with prizes at the end

Special thanks to AWS for hosting us at their office, AWS credits for in-person attendees and pizza!

What is fast.ai and the Practical Deep Learning for Coders?

The fast.ai python library is built to make building Deep Learning models relatively simple - and fast. It is built as on top of the PyTorch library and abstracts away a lot of the time consuming details that go into building models, and incorporates many best practices. It is now in version 2 and has evolved over the last few years.

The Deep Learning for Coders course is designed to introduce programmers to machine and deep learning through the fastai library, and teach the fundamental skills required to build state of the art models across a range of different data domains (tabular, natural language, images, recommendation etc).

The course runs over 8 lessons, and requires no ML knowledge, only intermediate Python skills.

Fast.ai also has other courses, including data ethics, computational linear algebra, NLP and more.

Our Mentors

- 10 in-person mentors based in Brisbane, Australia.
- Our mentors bring experience from both Research & Industry
- The fast.ai Discord (discord.com/invite/xnpeRdg276) is a fantastic resource with thousands of fast.ai users. This is a great place to get more advanced help with the fast.ai library (as well as the fast.ai forums).
- Introductions

Green: Mentor

Grey: Student

Red: Organiser (and mentor)

Course Requirements

Skills:

- Intermediate python (1 year+ is recommended).

Minimum Required Time (weekly):

Watching fast.ai lessons:	2 hours/week
Lesson questionnaire:	1 hour/week
Coding practice in notebook:	2-5 hours/week
Weekly recap sessions:	2 hours
Group Projects:	4 hours
Total time:	**11 -14 hours**

Course Plan

Week	Fast.ai Lesson / Topic (First 60 minutes)	Group Work / Project Milestones (Last 60 minutes)
1	Course Introduction	General Q&A, AWS/Colab environment setup
2	1 - Your first models	-
3	2 - Evidence and p values	Project ideas presented, start forming groups
4	3 - Production and deployment	Project groups formed & dataset selected
5	4 - SGD from scratch	EDA complete
6	5 - Data ethics	Data cleaning & feature engineering complete
7	6 - Collaborative filtering	Model development in progress
8	7 - Tabular data	Model tuning & validation completed
9	8 - Natural language processing	Develop presentation / demo
10	Mentor tips for project presentations / demos	Project presentations, judging & prizes

Weekly Sessions: Content Recap

- Walks through the key content and concepts in the lesson (30 minutes max)
- After the content recap, we'll walk through the answers to the lesson questionnaire, and then hold Q&A.
- This is the time to ask questions about the lesson or anything that didn't make sense.
- It is not a complete lesson - you need to have watched the lesson yourself before the in-person session. Any individual technical issues should be raised in Discord - keep this session to questions that are relevant to other students.

Group Projects

- Throughout the course, you will form groups to work on a dataset or problem as a team. This will allow you to take what you have learned and apply it on a real dataset.
- Teams will be a total of 4-6 people.
- Starting in week 3, teams will form groups based on their desired problem or data domain (e.g. NLP, computer vision etc).
- Teams can choose their own dataset or problem. A list of examples will be provided as inspiration, but teams are allowed to select their own dataset as well (provided it is publicly accessible and suitable for the 10 week timeframe)
- Each week, project groups should meet to discuss project progress and work on their projects. This should be a time that works for all team members (try to group up into suitable time zones).
- You should only commit to a team if you can commit to:
    - At least 4 hours per week of group work (outside of the course content/study)
    - Meeting weekly milestones
    - Working as a team (collaboration and communication is important)
    - Will stick around for the full 10 weeks.

Compute Options

- Amazon Web Services (AWS)
  - EC2
    - A linux virtual machine. Gives you more flexibility and practice working with Linux, full flexibility to manage python environments, and persistent storage.
    - Gives full access to instance, allowing running of other services (e.g. Streamlit) and easier modification of Jupyter configuration & python environments.
    - Standard EC2 pricing applies ($1.50 USD / hour for GPU instance)
    - Instructions: https://course.fast.ai/start_aws
  - Sagemaker:
    - Gives a simple start/stop experience through the browser, with less setup time and no management of underlying infrastructure. Also provides access to other Sagemaker tools, including managed training & deployment (not covered in this course).
- Google Colab
  - Managed notebooks with close integration with Google Drive
  - Restricted access to underlying environment, requires reinstalling on each notebook run
  - Free credits for new accounts. Setup instructions: https://course.fast.ai/start_gcp
- Jarvis Labs
  - Preconfigured fast.ai v2 notebook instances, with SSH access & persistent storage.
  - GPU instances from $0.39/hour, with 20% discount for fast.ai students until end of 2021
  - Instructions: https://course.fast.ai/start_jarviscloud

Communication

Discord: This is the main place that we will deliver announcements, course content, and provide online mentoring through the week. It will also be the preferred place for teams to complete team projects.

Youtube: All weekly group sessions will be streamed via Youtube and be instantly available as a regular Youtube video which you can watch on demand.

Email: Some course announcements will be made here, but Discord should be the main place that we

Questions