Machine Learning Bootcamp

Content Kit

How to use this deck

1. **Choose the modules:** There are in total 4 modules of ML Bootcamp (Design, Study, Learn, Build). Pick up which modules you'd like to have for your audience. We recommend to include all four in the given sequence for the best experience.
2. **Choose the format:** You can do the whole bootcamp (4 modules) in 2 continuous days or different modules spread over different days - based on the availability of your audience. For every module, we've provided with a sample agenda.
3. **Select the trainers:** Make sure to go through the trainer requirements for selecting the best fit trainers.
4. **Select your audience:** Make sure to send out pre-requisites along with introduction to set the right expectations for participants. Once you confirm the participants, feel free to send the pre-work, so that they're better prepared when they come to the bootcamp.

Prerequisites for participants

- Proficiency in programming basics, and some experience coding in **Python**.
- Basic proficiency with common query language such as **SQL**.
- Experience with **data** modeling, extract, transform, load activities.
- Familiarity using the **Google Cloud Platform**.
- Familiarity with **Machine Learning** and/or statistics.

Prework

If the participants don't meet the prerequisites, following are the materials they can go through, to prepare themselves.

- Python programming concepts
- Get started with TensorFlow
- Build your first ML App
- Google Cloud Platform Big Data and Machine Learning Fundamentals

Machine Learning Bootcamp Content

Module-1 Design	Module-2 Learn	Module-3 Study	Module-4 Build
Duration: 4 hours **Aim**: To introduce participants with design thinking approach to frame ML problems **Format**: Design thinking workshop **Participants receive:** Detailed design thinking guide & materials	**Duration:** 4-6 hours **Aim:** To get participants understand ML theory & practice through study groups **Format:** Group Study **Participants receive:** 1 month free access to relevant course on Coursera	**Duration**: 4 hours **Aim:** To get participants understand Google Cloud Platform ML offerings through codelabs **Format:** Hands on labs **Participants receive:** 1 month free & unlimited access to Qwiklabs	**Duration**: 4-6 hours **Aim**: To help participants develop a working ML model to solve a real world problem **Format**: Hackathon **Participants receive:** $XXX GCP credits to build prototypes

<Design> Example Agenda

6:00 pm	Welcome!
6:05 pm	Group formation
6:15 pm	Design thinking workshop
8:00 pm	Break
8:30 pm	Design thinking workshop (contd.)
9:45 pm	Presentations
10:00 pm	Event ends - THANK YOU!

Tips for customization:

- Group according to different themes of interest for example - fintech, healthcare, ecommerce, education etc. This allows for focussed thinking between the like minded individuals.

Self study

- [Recommended] Take Introduction to Machine Learning Problem Framing course

* This is a sample description. Feel free to personalize to your community.

<Learn> Example Agenda

6:00 pm	Welcome!
6:05 pm	Brief overview of course content
6:20 pm	Module-1 (group study)
9:20 pm	QnA and guidance for rest of the course
10:00 pm	Event ends - THANK YOU!

Tips for customization:

- Give a high level overview of course to the audience, have them try couple of initial exercises and encourage them to take self-study.
- If you have startups in your network who're building ML solutions (@scale using GCP) - it would be great idea to invite them for a lightning talk to inspire others.

Self study:

- [Recommended] Use 1-month free subscription of coursera and complete the remaining 3 modules of Serverless ML course to earn a certificate.
- [Advanced] Use 1-month free subscription of coursera and complete full Data Engineering Specialization (comprising of 5 courses).

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<Study> Example Agenda

6:00 pm	Welcome!
6:05 pm	Introduction
6:20 pm	Lab 1: Cloud ML Engine: Qwik Start
7:30 pm	Lab 2: Dataprep: Qwik Start
8:30 pm	Break
8:40 pm	Lab 3: Dataflow: Qwik Start
9:40 pm	Cloud Speech API
10:00 pm	Event ends - THANK YOU!

Tips for customization:

- You can choose a different set of labs from Baseline ML/AI quest depending on your target audience.
- If you have startups in your network who're building ML solutions (@scale using GCP) - it would be great idea to invite them for a lightning talk to inspire others.

Self study:

- [Recommended] Use 1-month free subscription of qwiklabs and complete all the remaining labs of Baseline ML quest to earn a qwiklabs badge.
- [Advanced] Data Science on Google Cloud Platform: Machine Learning quest

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<Build> Example Agenda *[Basic]*

5:00 pm	Welcome!
5:05 pm	Challenge overview
5:15 pm	Coding period (starter colab)
9:15 pm	Wrap up & prototype submission
9:45 pm	1 min showcase
10:00 pm	Event ends - THANK YOU!

Tips for customization:

- Give the Kaggle challenge a form of competition, create live leaderboard for the teams to list down their scores and invite the winning teams to present.
- Other challenges to choose from: SMS Spam classification, Fashion MNIST

Next steps:

- [Recommended] Each participating startup receives $XXX GCP credits to build a prototype/feature using ML. Selected startups to receive further mentorship from Google technology experts.

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<Build> Example Agenda *[Advanced]*

5:00 pm	Welcome!
5:05 pm	Datasets (select 2-3) up for hack
5:15 pm	Hackathon
9:15 pm	Wrap up & prototype submission
9:45 pm	1 min showcase
10:00 pm	Event ends - THANK YOU!

Tips for customization:

- Keep thematic hackathon
- Encourage use of tools learned in Module-1 & 2 (Scalable ML model using GCP)
- Hackathon guide: https://hackathon.guide/

Next steps:

- [Recommended] Each participating startup receives $XXX GCP credits to build a prototype/feature using ML. Selected startups to receive further mentorship from Google technology experts.

* This is a sample description. Feel free to personalize to your community.

Trainer requirements *[for a class of 50]*

Design

1 main facilitator, 3 volunteers

Facilitator : Someone who has delivered a design sprint/ design thinking workshop in past for a group of 25-30 people. Familiarity with ML use cases (in depth knowledge of ML/AI not required).

Example: GDE/ certified sprint master / UX expert

Volunteers : Someone who is familiar with design thinking methodology and is keen to help teams understand the process. Eg. Community organizers.

Study & Learn

1 main facilitator, 3 volunteers

Facilitator : Someone who has delivered training/sessions on ML & GCP (knowledge of both theory & application), Experienced with qwiklabs (completed quests), worked on a real life ML project.

Example: Cloud Study Jam (CSJ) facilitator / GDEs / Trainer

Volunteers : Someone who is familiar with qwiklab platform and is keen to help teams with session related doubts/help when stuck. Eg. CSJ attendees who completed quests.

Build

1 main facilitator, 3 mentors

Facilitator : Someone who has participated in any hackathon, has experience building ML models (using TF & GCP), and has fair understanding of end to end ML project lifecycle.

Example: GDE / Organizer of ML/Cloud community

Mentors : Experienced ML practitioners in industry who can mentor teams on building their ML models, familiar with TF & GCP applications.

Trainer resources

Module-1
Design

Presentation material: Design thinking deck (estimated time ~4 hours)

Preparation material: Detailed design thinking guide & Speaker notes

Things to note: Aim of this workshop is not to take the participants through the whole design thinking process - but to take them to a stage where they're able to formulate a problem that can be solved using Machine Learning in one or other way (see the presentation material). Group of 6-8 people is a good size. At the end of the session, ask one person from each group to come up and present their idea.

Module-2
Learn

Presentation material: Use the videos from ML with GCP & TF course to present

Preparation material: Go through MLCC to familiarise yourself with ML concepts, Try doing one lab on Qwiklab to be familiar with platform & environment.

Things to note: Participants will be required to use the free voucher for coursera specialization (would have been shared with organizer before the session), they will be required to put in their credit card for access - which can be removed anytime later & they'll still have the access. If there's a problem with access, you may want to consider an option of pairing up participants.

Trainer resources

Module-3
Study

Presentation material: You can present the qwiklabs screen and suggest the participants to follow.

Preparation material: Go through the Baseline AI/ML quest in order to better prepared with the whole topic.

Things to note: Give sufficient time (~10-15 mins) to participants for setting up their qwiklab accounts (voucher would have been shared with organizer before the session), redeeming the voucher & getting ready. Spend 10 mins before and after the lab discussing what they're going to learn and what did they learn respectively. Remind them that the lab is timed, so they shouldn't take a long break in between of a lab.

Module-4
Build

Presentation material: (Basic) Present the screen of Kaggle challenge, (Advanced) Share the themes, timeline & guidelines of hackathon.

Preparation material: (Basic) Go through the starter colab, (Advanced) Go through any hackathon guide - example

Best practices: (Basic) 1) Before starting, emphasize that there are multiple ways (i.e., using engineered features, using TensorFlow/Keras text classification APIs, using TF Hub) to solve the project challenge and it's up to the participants to choose the one(s) that they are comfortable with. 2) Evangelize Kaggle as a platform not just for the project duration but as an open-sourced ML challenge repository for participants to apply and improve their ML skills learnt during the bootcamp at their leisure. Kaggle also serves as a platform to showcase ML skills for potential job roles and hiring. 3) Though not strictly required, it's advisable to use TensorFlow API

Questions?

Reach out to desaiv@google.com or thyeyeowbok@google.com