

Exercise 3 - Deliver

Due 22th January 2020

OVERVIEW AND GOALS

In this third and final exercise your task is to demonstrate what you have achieved in the previous few months. You will do this in three different forms:

- Build a small demo application that runs your trained model and performs inference
- Write the final report of your project
- Prepare the presentation that you will give in class

DELIVERABLES

Demo Application

Even the best scientific research is worthless if you can't share your knowledge and communicate your results. Therefore, you are asked to build a small demo application that a potential user could run to understand what you have done. There are many ways how you can realize this. In its simplest form, it is a command-line tool that takes the user input and produces a file as a result. A more sophisticated way would be to have a [docker](#) container that wraps such a command-line tool and could be deployed to a server for others to use. But depending on your project, a completely different form might be appropriate.

A great way to build a sample application is to develop a simple JavaScript web application that runs your trained model in the browser and provides a minimal interface to trigger inference. Some tools for doing this are [ONNX.js](#), [Tensorflow.js](#), and [ConvNet.js](#). You can upload your trained models to Github (as an attachment to a release - don't commit it into the repository!) and dynamically fetch them when the user opens the webpage.

As a reference, you can play with the [Deep Optical Measure Detector](#), which was developed for recognizing the structure (measures) in music scores. It is a [Vue.js](#) application and [available on Github](#). For ONNX.js, there is also a range of [publicly available demos](#) that you can adapt.

Final Report

Your final report should contain a concise and informative written summary of your project. A large section of that report can be taken from your project proposal with appropriate edits. The entire report should be no longer than 6 pages.

It should answer the four fundamental questions:

- What is the problem that you tried to solve?
- Why is it a problem?
- What is your solution?
- Why is it a solution? (And in particular, why is or isn't deep learning a solution?)

Additionally, it should cover:

- The main take-aways and insights you gained from your project (e.g., batch-normalization improved the results significantly, Adadelta worked much better than SGD on my data, annotating data works really good with tool X, setting up the pre-processing takes much more time than I expected, ...)
- If you would do the same project again, what - if anything - would you do differently?
- How much time did you spend on your project? How does the number compare to your initial estimate? If you underestimated any part, what were the reasons for this?

The final report should be submitted as a single PDF file.

Presentation

Prepare a five-minutes presentation which you will give on 23rd or 30th of January during class. It should cover a quick introduction into your topic, the selected approach and the results. This part should take no longer than two minutes. The rest of your presentation should focus on insights that you want to share with your colleagues and ideally a small demo of the project. In case a live demo would take too much time, consider preparing a short video.

There will be approximately 15 presentations on each day, therefore, the five minutes are a hard limit. Practice your talk and make sure you don't exceed the time or you will be stopped.

For fairness, every student should be prepared to present their work already on the 23rd of January and the actual presenters will randomly be selected.

Submission

Once you're done with your work, notify me by writing an e-mail to alexander.pacha@tuwien.ac.at with the subject **[Applied Deep Learning] Exercise 3 - <Your Matr.Number>** and the final report as an attachment.

CRITERIA FOR GRADING

As discussed in the preliminary lecture, every assignment will be graded according to these five criteria (as applicable):

- Results
- Creativity
- Complexity
- Code Quality
- Presentation

The demo application, the report and the presentation are each worth up to 10 points.

OTHER QUESTIONS

In case you have other questions regarding the assignment, please send an e-mail to alexander.pacha@tuwien.ac.at with the subject line starting with **[Applied Deep Learning]** or post your question in the discussion forum in [TUWEL](#) (preferred).