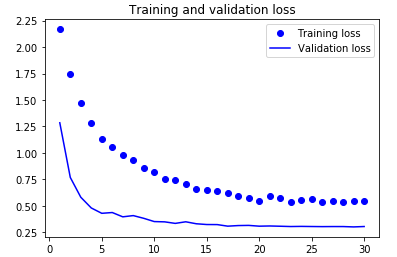
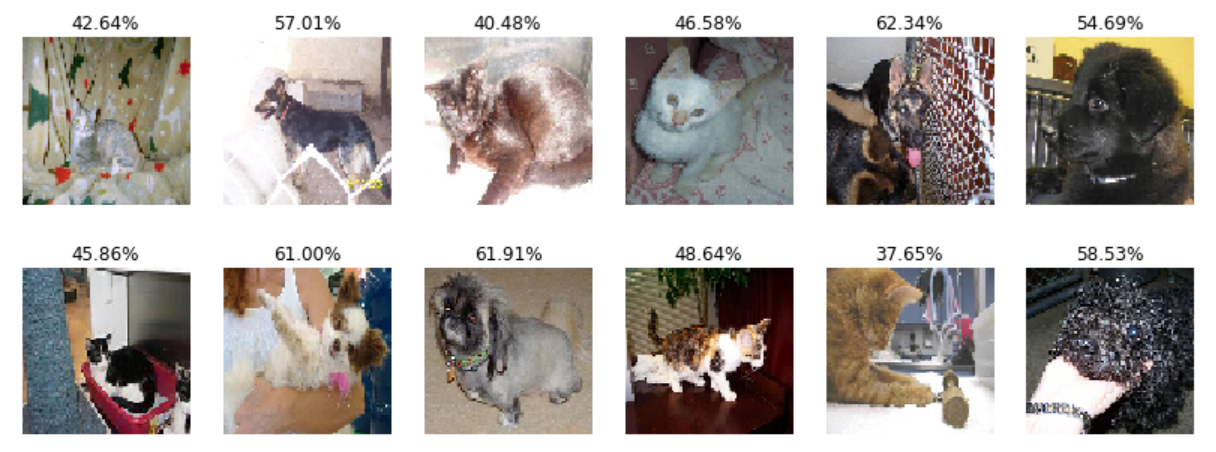
*Introduction to Python and Machine Learning* project

Steps for your project:

1. Please create a new jupyter notebook and call it:  
   NAME\_SURNAME\_STUDENTSID\_PROJECT.ipynb
2. Create a neural network model with your choice of the number of layers, filters (neurons), optimizer, loss function etc. (but make sure that you research these on the Internet, e.g. some loss functions are useless with certain types of networks) – **try to get the best test accuracy and the lowest test loss** – I will take it into account when grading you!
3. Visualise the training loss (in a form of a series of dots) and validation loss (in a form of a continuous line) throughout the training epochs, on the same graph, in the way similar to the following:



1. Present the accuracy and loss of the evaluation on the **testing set** (graph is not necessary, just the numbers are OK).
2. Present the visualisation of random 6 correctly (top row) and 6 incorrectly (bottom row) labelled pictures. The labels (percentages) should be green (correct network label), or red (incorrect labels), similarly to the picture below (mind that there are no colorings of the labels below, and no incorrectly labelled pictures, **but you should add these yourself** in your notebook!):



1. Present any cat/dog picture to the model (it can be even your cat/dog photo!) and use .predict() on it – check whether your model recognizes it correctly!
2. Save the model (in the NAME\_SURNAME\_STUDENTSID\_MODEL.h5 format) and **submit it together** with the jupyter notebook file

Summary: so, you have to upload 2 files to the e-learning platform:

1. The notebook with all your preparations for creating the model and visualisations of results.
2. The model itself in the .h5 format.

Remember: **try to get the best test accuracy and the lowest test loss** (but don’t use cheap tricks like testing on random 10 pictures many times until you get 99% accuracy – you are saving your model (step 7. above) so I will test it myself 😊). Moreover, if you overtrain your model, it will not recognize your cat/dog (step 6. above) 😊.

MOREOVER: do **NOT** cheat (don’t copy the results from the other students)! I really don’t like that, and this is how I look like when I trace down a case of plagiarism: <https://www.youtube.com/watch?v=hEGMwEuwanc>

I do not care which person copied the result/model/notebook – both persons (the person copying and the person allowing for copying) will be punished in case of plagiarism (**however, the person copying the answers will have a worse punishment!**). **You may help one another in understanding code** (and this task will require understanding of our last 3-4 notebooks from the class), but I would like each one of you to finish this task by themselves.