

# 50.021 – AI

Alex

## Week 9++: AI project

[The following notes are compiled from various sources such as textbooks, lecture materials, Web resources and are shared for academic purposes only, intended for use by students registered for a specific course. In the interest of brevity, every source is not cited. The compiler of these notes gratefully acknowledges all such sources. ]

- You are allowed to work in groups of 4.
- you will get no coding homeworks after week 9
- **submission date is: 11th of August, 6PM**

## Choice 1: PatchCamelyon

<https://github.com/basveeling/pcam>

This is preloaded on the AMI image. I have it also on my local machine for those who want to get it directly.

### TODOs:

- report your performance on the test set. Compare against state of the art
- create a GUI (python has many GUI wrappers!) that makes a prediction for an image for the validation dataset using your pretrained classifier. It should show the image and the prediction
- put in your report everything (including what is to be installed in what version) so that the TAs can verify your submissions
- put in your submission the group members and their contribution

Note: I have not tried if using a slightly larger image than the center 32x32 would give better results due to incorporation of context (even if it increases label noise, that is a tradeoff).

That works well if you have not much GPU available. Try to beat the baseline results. That is hard.

## Choice 2: A self-proposed project

You need to submit the project proposal until **Monday 22th of July for approval**. The proposal should contain

- topic, problem
- expected inputs and outputs
- what dataset you are going to use
- team members
- what you are going to deliver
- deliverable must be at least (a) code for training, (b) for deployment, (c) a GUI runnable on user-chosen data and (d) a report

No proposals using MNIST, CIFAR or its derivatives, CatsvsDogs or other trivialities will be approved. No very simple GYM environments, too, like mountaincar. All ATARI stuffs are eligible.

Other medical data sets ? Check for example one of the past from <https://grand-challenge.org/challenges/> where you can get the data.

I suggest to avoid image registration, alignment tasks or 3D tasks (computational load!).

You are free to try anything in reinforcement learning or other problems, however **the code cannot be from a github or from an OpenAI Gym submission without substantial changes**.

Note that for reinforcement learning on images you may need lots of GPU time, like 2 days per run.