The pytorch ecosystem

Machine Learning Operations

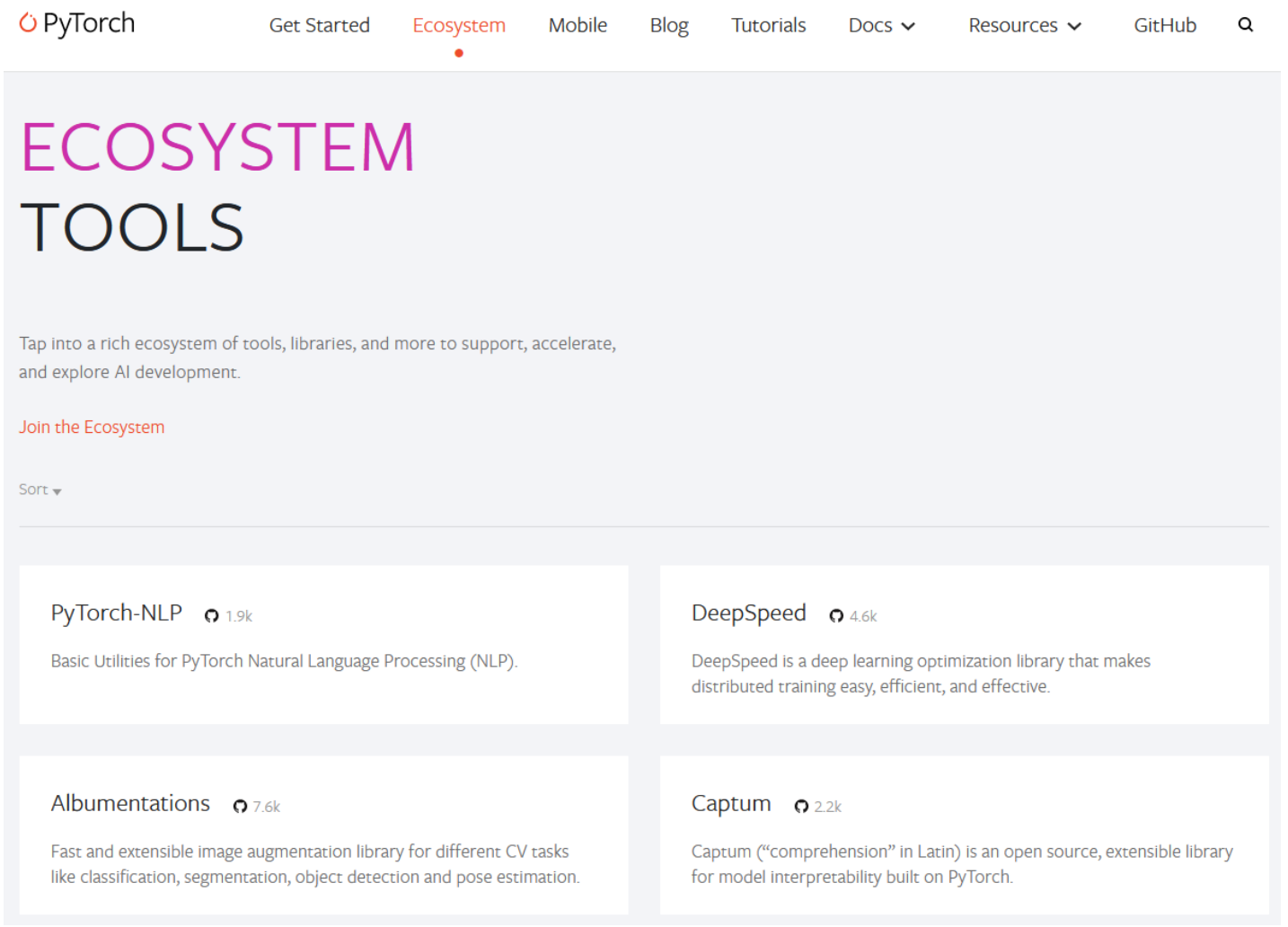
Nicki Skafte Detlefsen,

Postdoc

DTU Compute

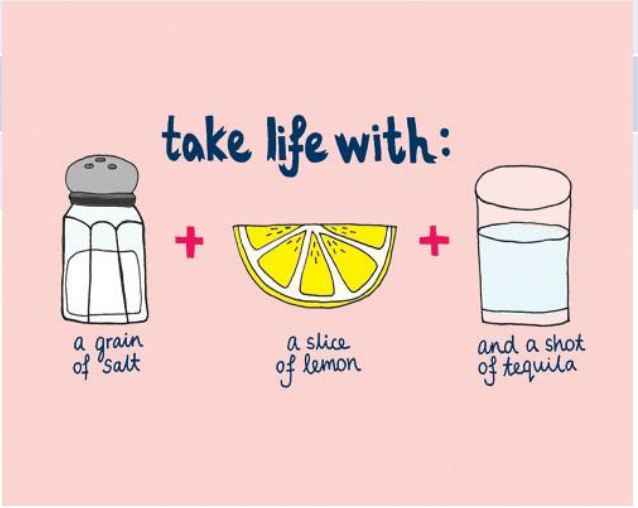
The ecosystem

Collection of frameworks build to be used in combination with Pytorch



Fremwork categorising

Data specific frameworks	Training frameworks	Utility fremeworks
Transformers	fastai	Albumentations
Detectron2	Ray	PySyft
Pytorch geometric	Pytorch Lightning	Pyro
Flair	Horovod	Optuna
AllenNLP	DeepSpeed	Hydra
ParlAI	ONNX Runtime	Pytorch Metric Learning
DGL	skorch	Einops
PyTorch3D	Ignite	
MMF	Polyaxon	
Kornia		



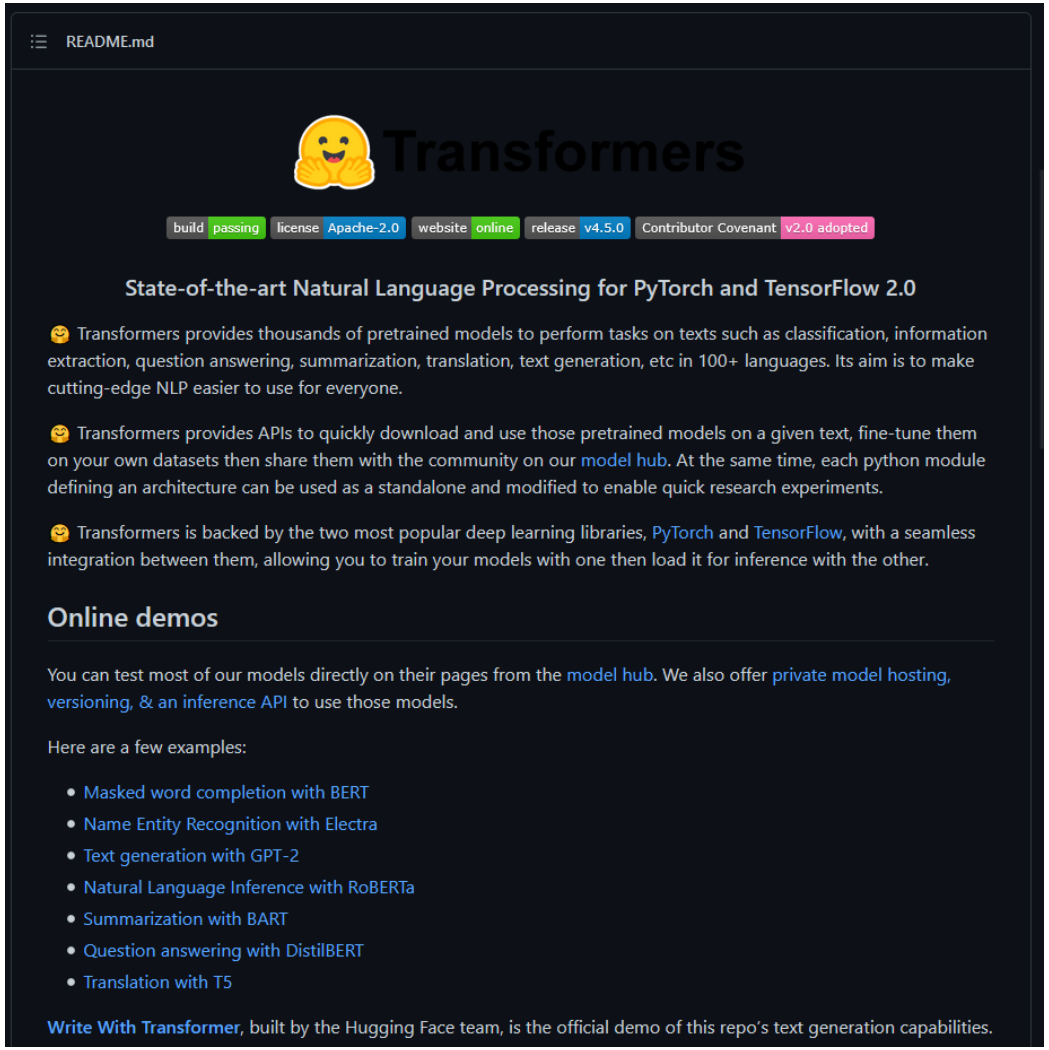
Project work

- Organise, plan and execute an MLOps project
- What you will be evaluated on
- Done in groups
- You will be asked to implement what is showcased in the exercises in your project work
- Each Thursday afternoon you will be asked to upload you current progress to github
- Monday after will be given small feedback
- Final day of the course you will be presenting your project work

Project 1: NLP

Fremework: Transformers (Huggingface)

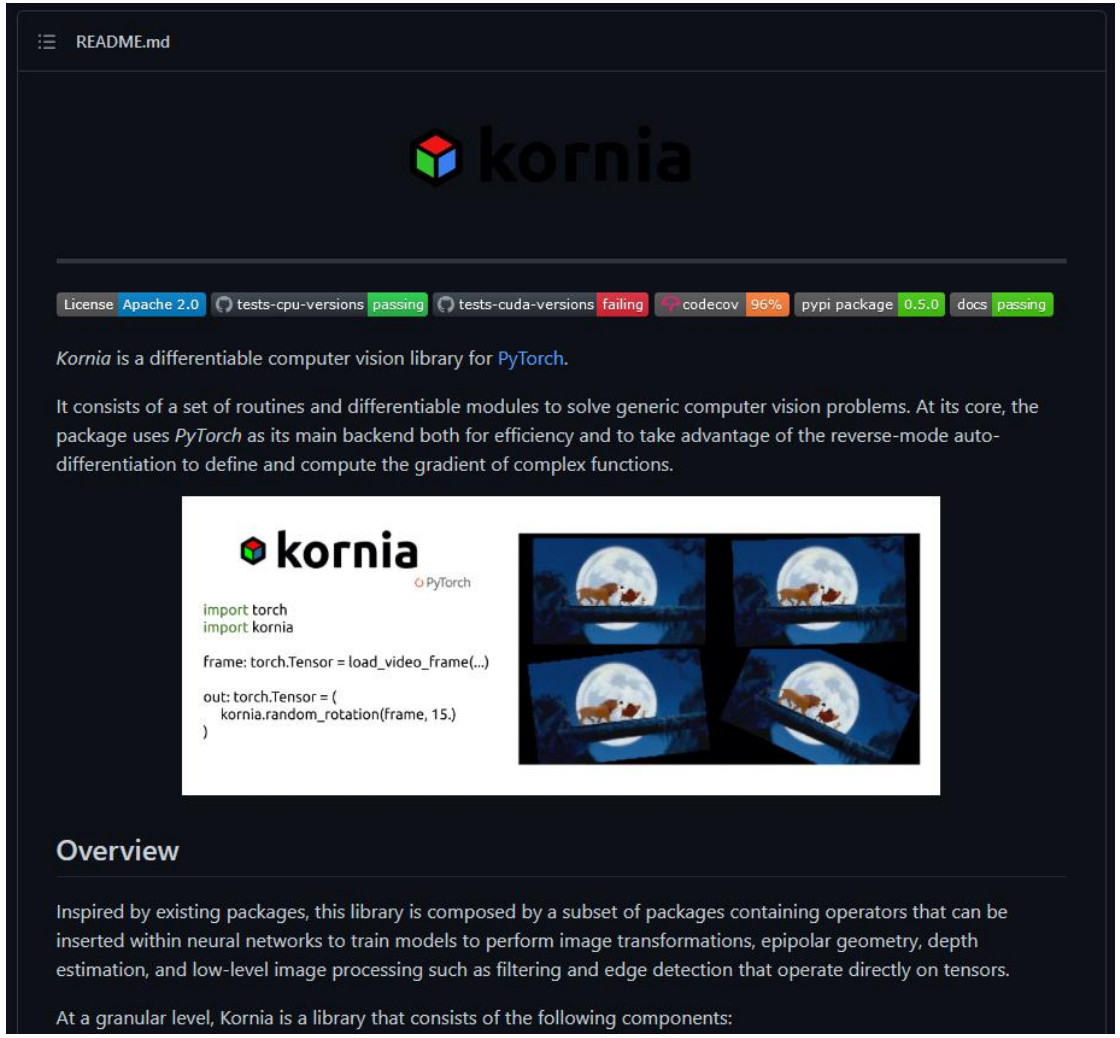
- https://github.com/huggingface/transformers
- State-of-the-art NLP models
- Most starred framework in the ecosystem



Project 2: CV

Framework: Kornia

- https://github.com/kornia/kornia
- Differentiable computer vision algoritms



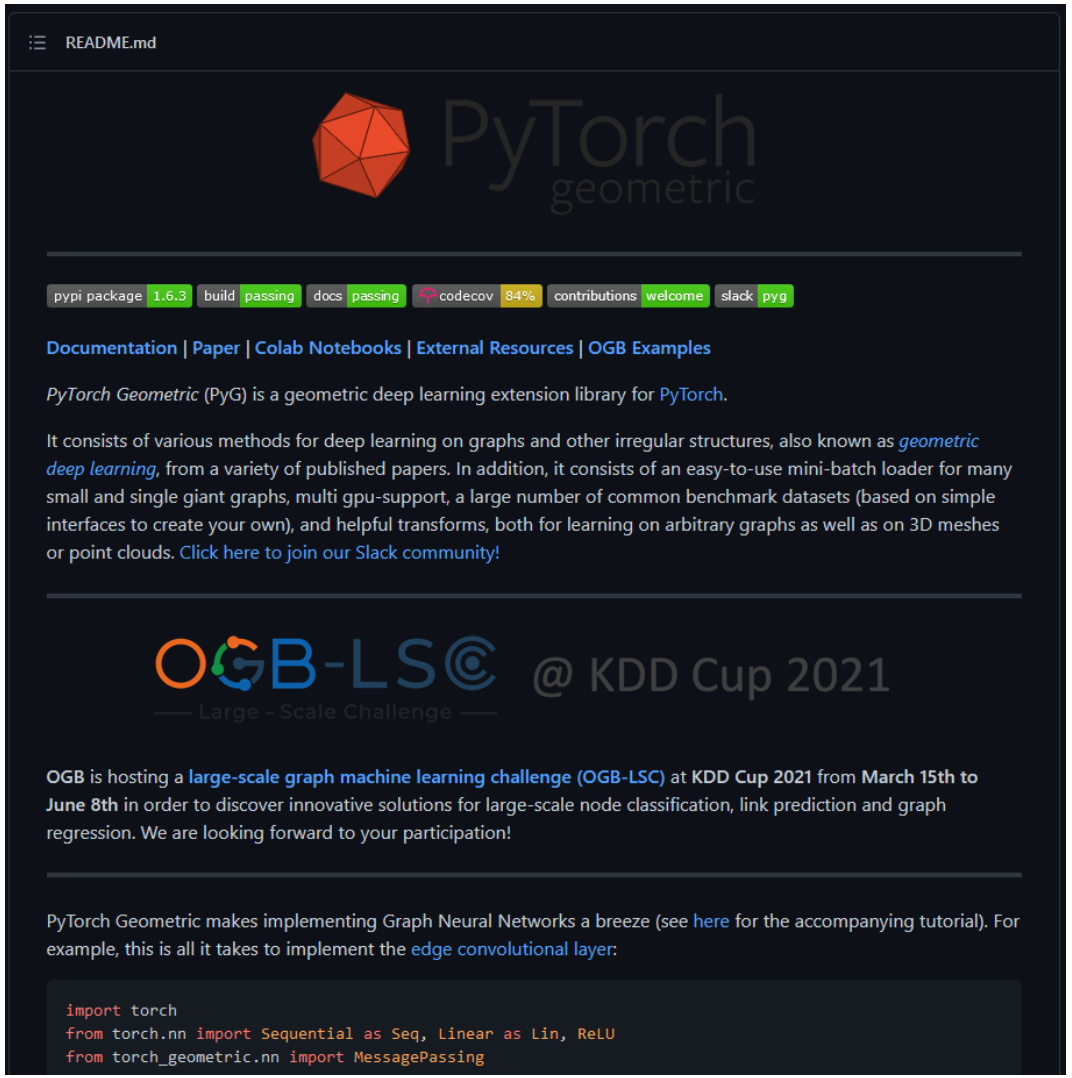
Project 3: Graphs and points

MLOps

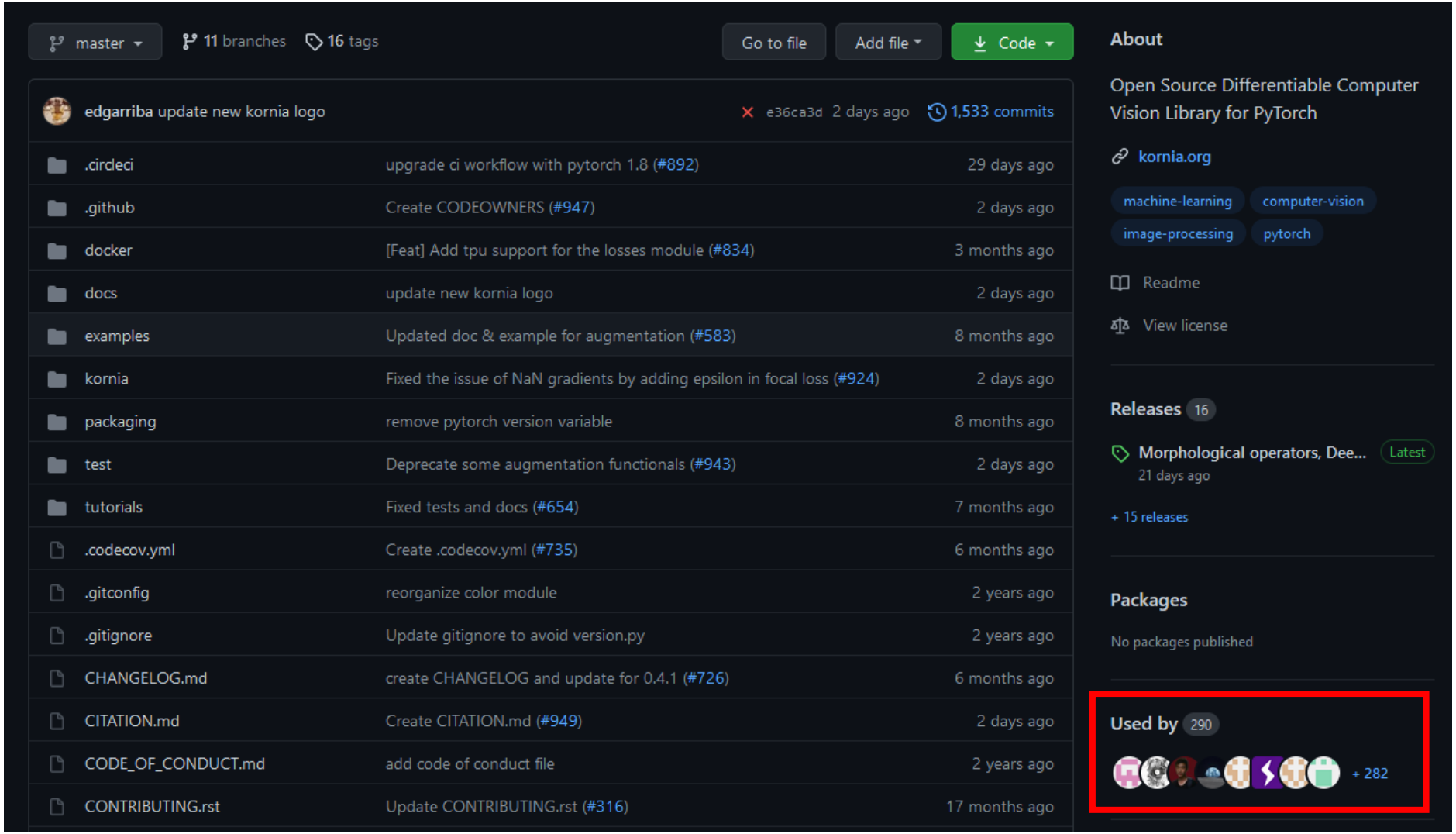
Framework: Pytorch Geometric

- https://github.com/rusty1s/pytorch_geometric

- Neural networks on graphs and pointclouds



Getting a good idea



Summary

- Pick a framework (try running their notebooks/examples!):
  - Project 1: NLP
  - Project 2: CV
  - Project 3: Graphs and points
- Brainstorm a project. It does not have to be particular big as you only have 4 full days for working on it
- Write a small (max 1 page) project description including:
  - What model do intent to implement
  - What data are you going to use
  - How you think the chosen framework can be incorporated