COMP-SCI 55510 - Advanced Software Engineering

Project Presentation (May 7th, 2019)

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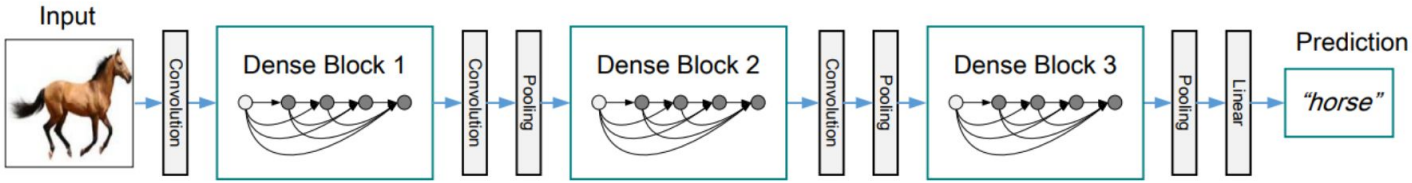
Model as a service

Our platform is an online platform that uses machine learning (ML) and deep learning (DL) models. The platform offers seven different models that provide users with information about uploading their own images and identifying images. Users can choose the most suitable model.

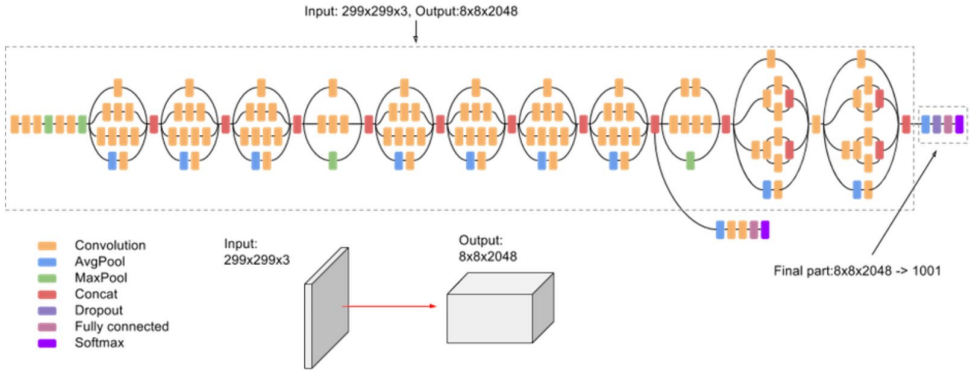
7 Models

- DenseNet121
- InceptionV3
- MobileNet
- Nasnet
- ResNet50
- VGG16
- xception

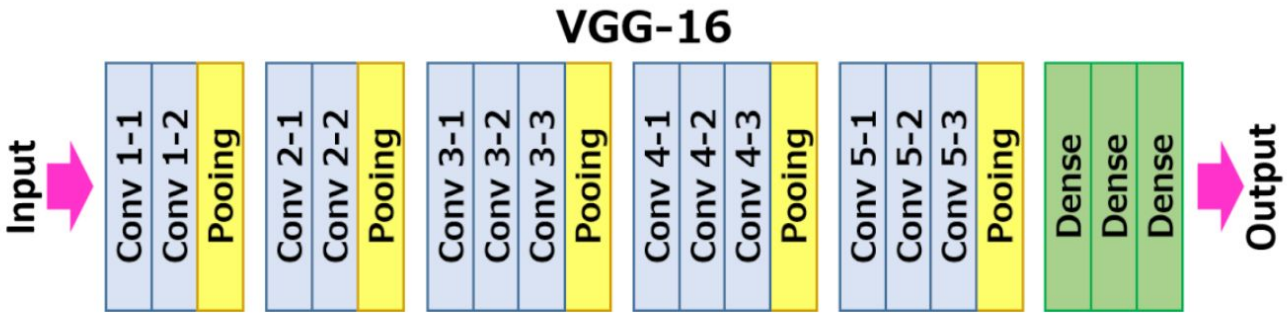
- DenseNet121:It is a logical extension of ResNet.DenseNet connects the output of the previous layer instead of using summation.



- InceptionV3 :Inception v3 is a widely-used image recognition model that has been shown to attain greater than 78.1% accuracy on the ImageNet dataset.



- ResNet50 : It is a deep convolutional networks for classification.
- VGG16 : It convolutional neural network is a model proposed by Oxford University in 2014.It is simple and practical, the most popular of which is VGG-16, which is a 16-layer model.

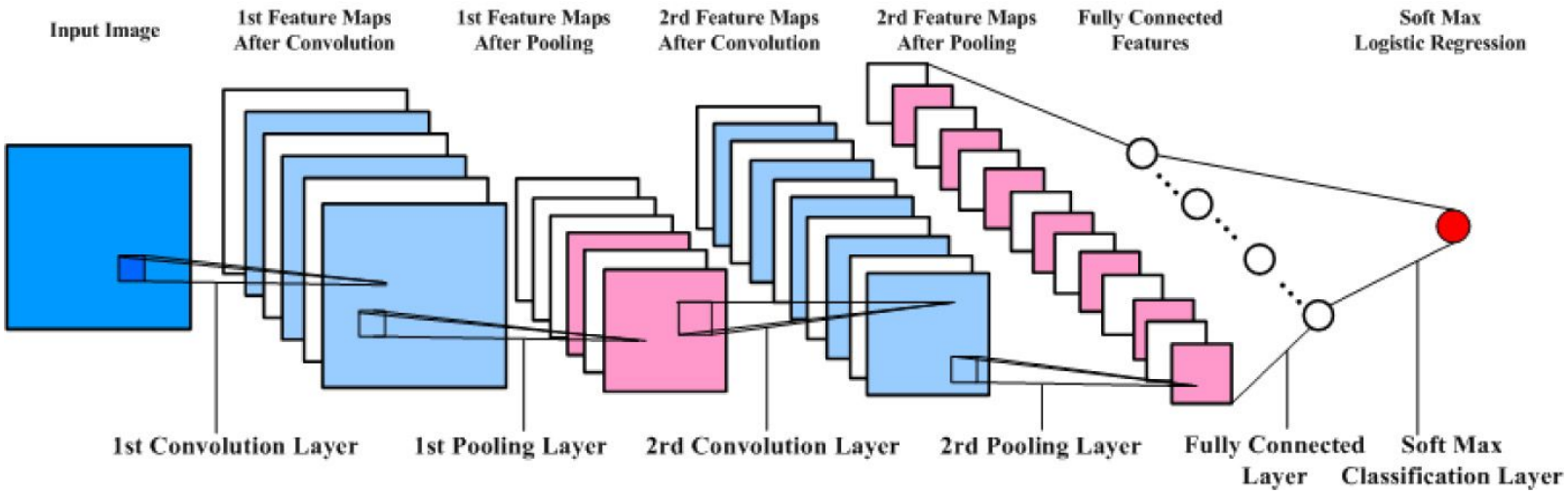


- MobileNet:It is an efficient model for mobile and embedded devices. MobileNets is based on streamlined, using depth wise separable convolutions to build lightweight deep neural networks.
- Nasnet :It classifies images. Given an image, the NasNet network will output probabilities of the different classes that an image could potentially belong to.
- xception:The mapping of cross-channel correlation and spatial correlation in the feature map of the convolutional neural network can be completely decoupled. This assumption is an extreme assumption in the Inception structure.

Models training

- Convolutional Neural Network should be involved in order to do some significant steps, which are embedding, convolution, pooling, flattening, full connection.

- Also, loss and accuracy are playing a significant role. The loss is the number of errors in prediction, so it should be decreased, and the accuracy should be increased.



Here is how to get the output from a pre-trained CNN model we received using Jupyter Notebook.

Deployment

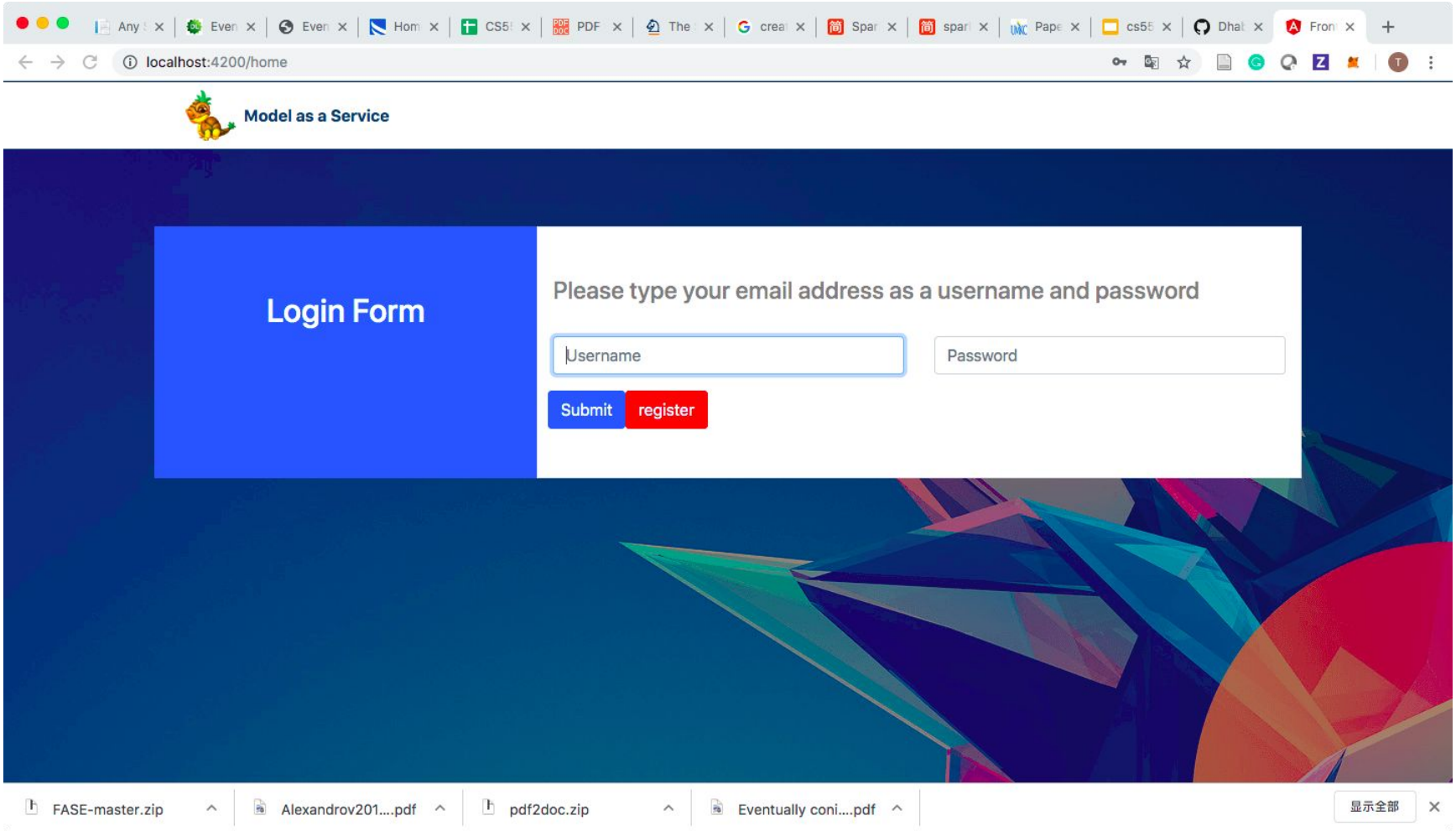
Link:

https://model-as-service-frontend.herokuapp.com/home

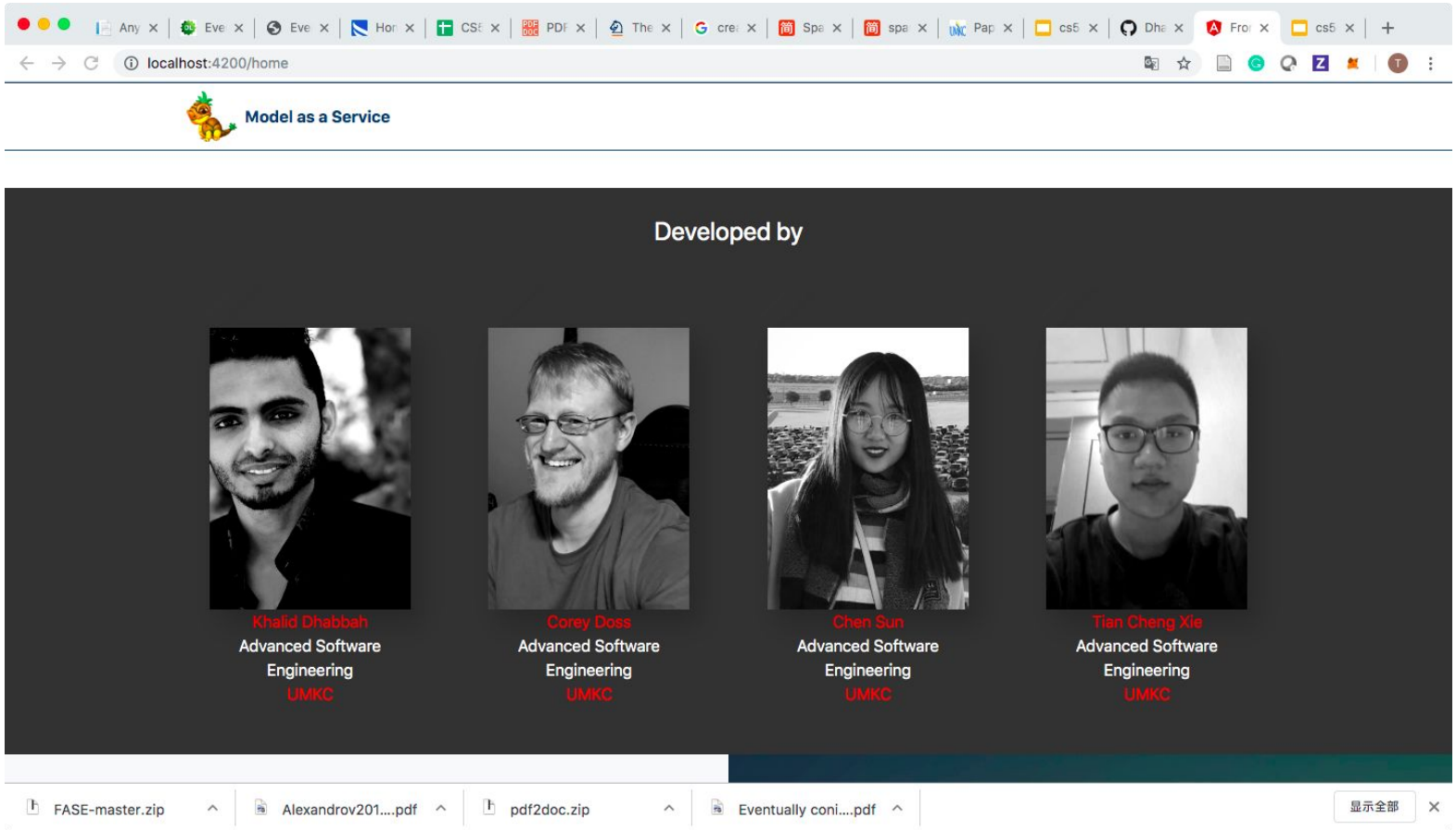
Video:

https://youtu.be/3_5osV7bB6k

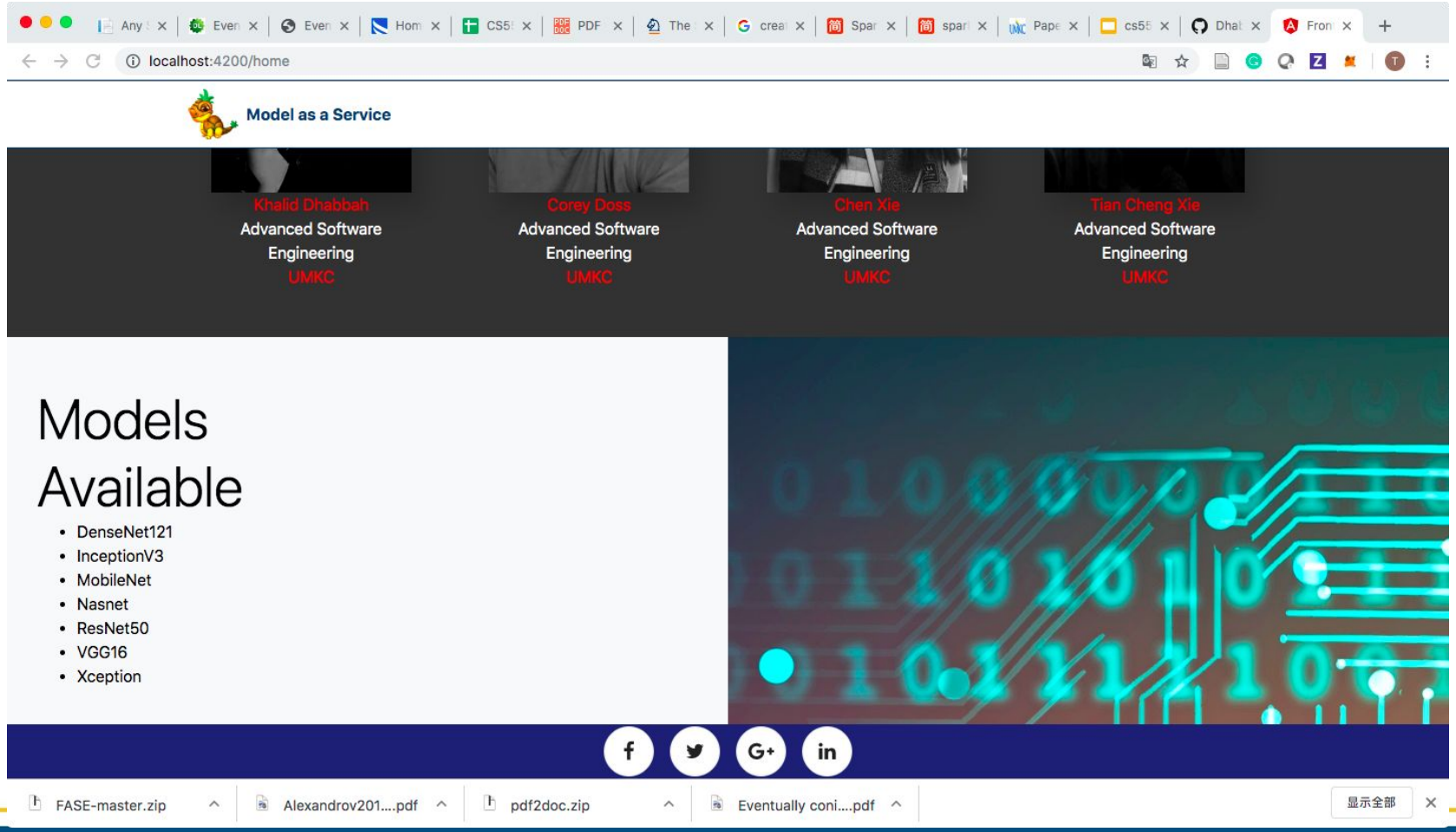
Deployment-Login



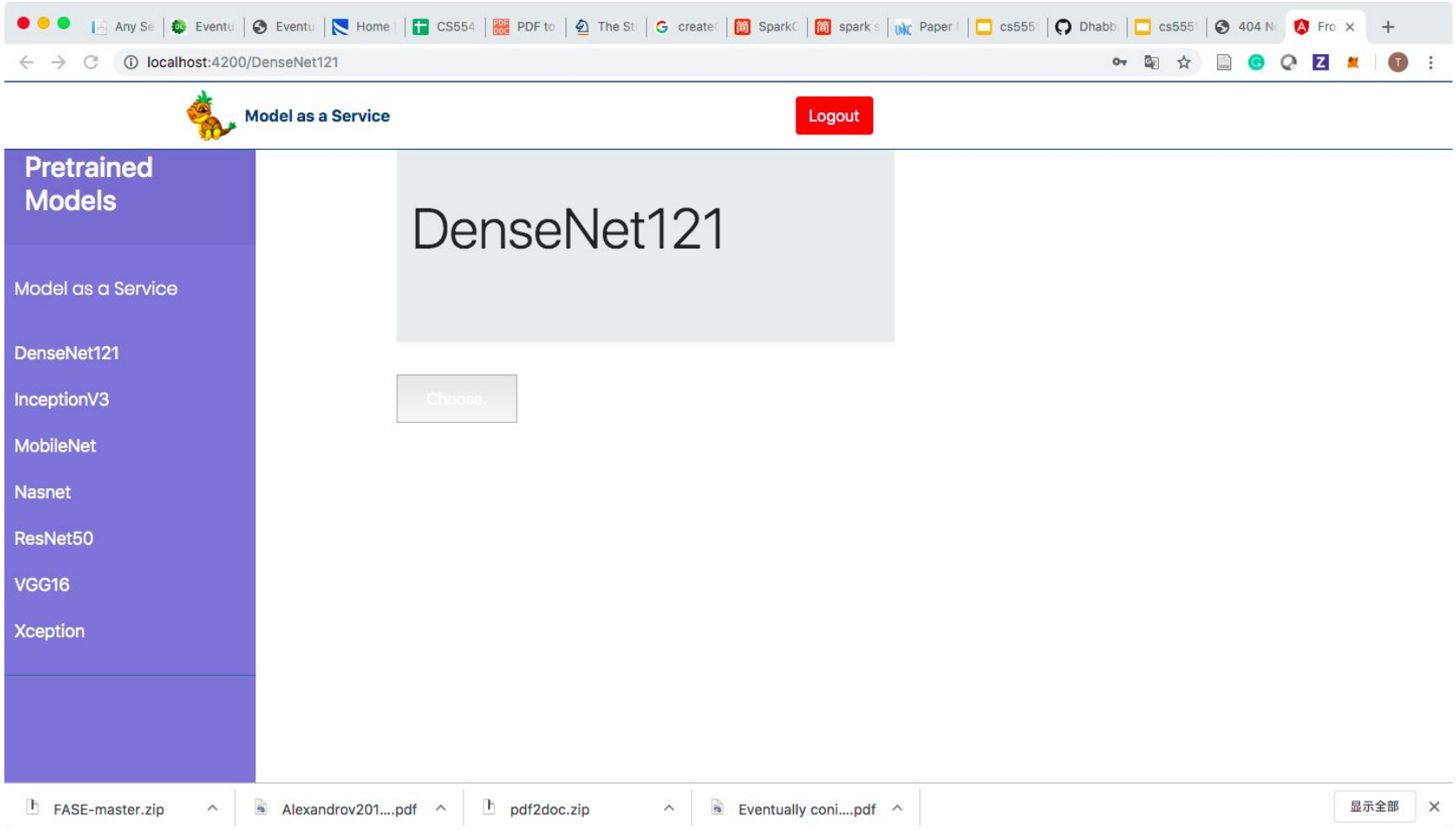
UI of Home Page



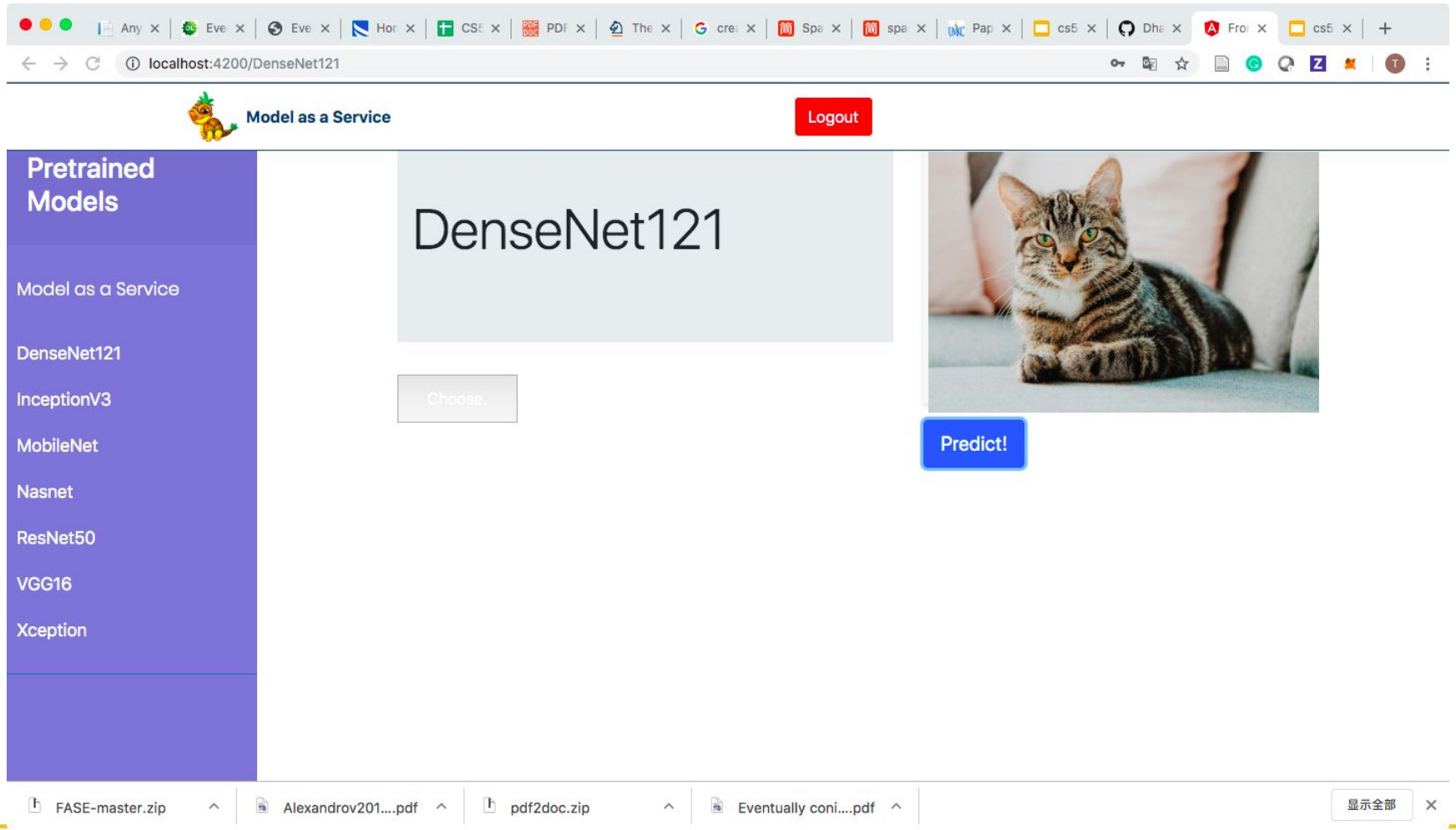
UI of Home Page



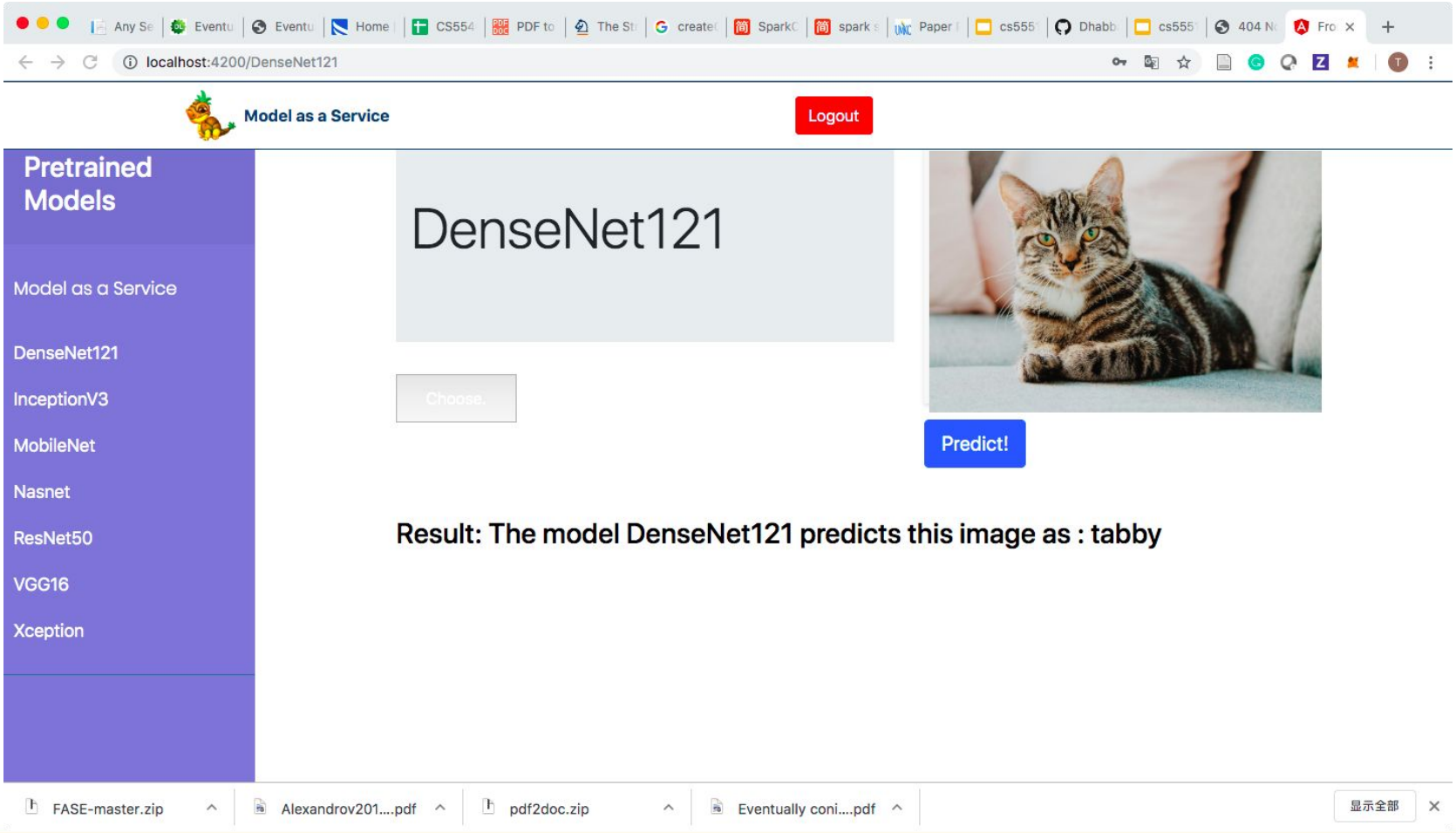
Models Page UI



Upload the Image



Prediction


localhost:4200/DenseNet121
Model as a Service
Logout
Pretrained Models
Model as a Service
DenseNet121
InceptionV3
MobileNet
Nasnet
ResNet50
VGG16
Xception
DenseNet121
Choose...
Predict!
Result: The model DenseNet121 predicts this image as : tabby
FASE-master.zip
Alexandrov201....pdf
pdf2doc.zip
Eventually coni....pdf
显示全部

Reference

1. https://arxiv.org/abs/1704.04861
2. https://www.modeldepot.io/jbrandowski/nasnet-mobile
3. https://neurohive.io/en/popular-networks/vgg16/
4. https://www.kaggle.com/lamhoangtung/densenet-121-lb-0-925
5. https://www.kaggle.com/pytorch/densenet121
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7. https://www.osapublishing.org/boe/fulltext.cfm?uri=boe-8-5-2732&id=363511

Thank you!