

# CLASSIFICATION AND MAPPING TWITTER IMAGES

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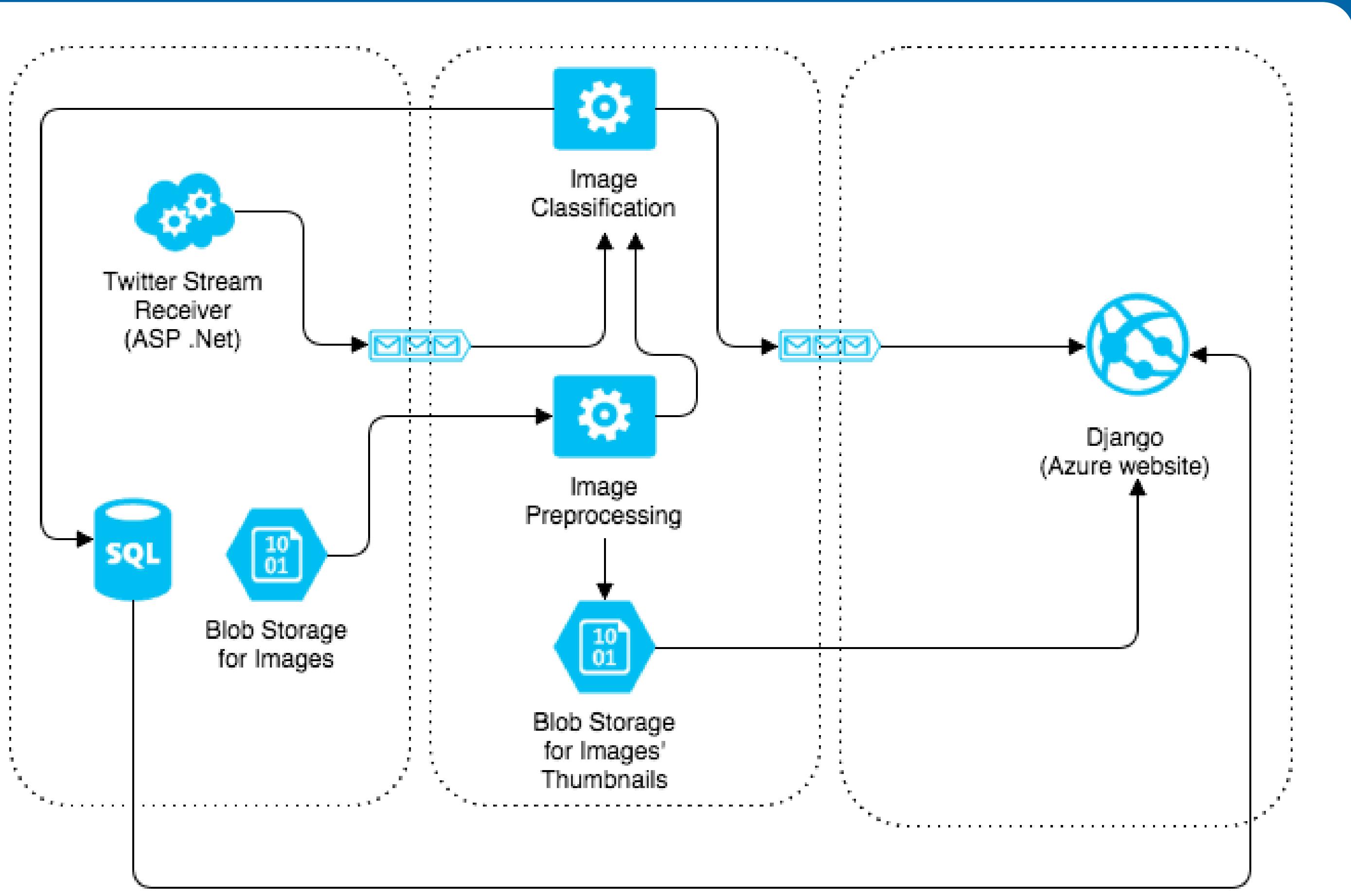
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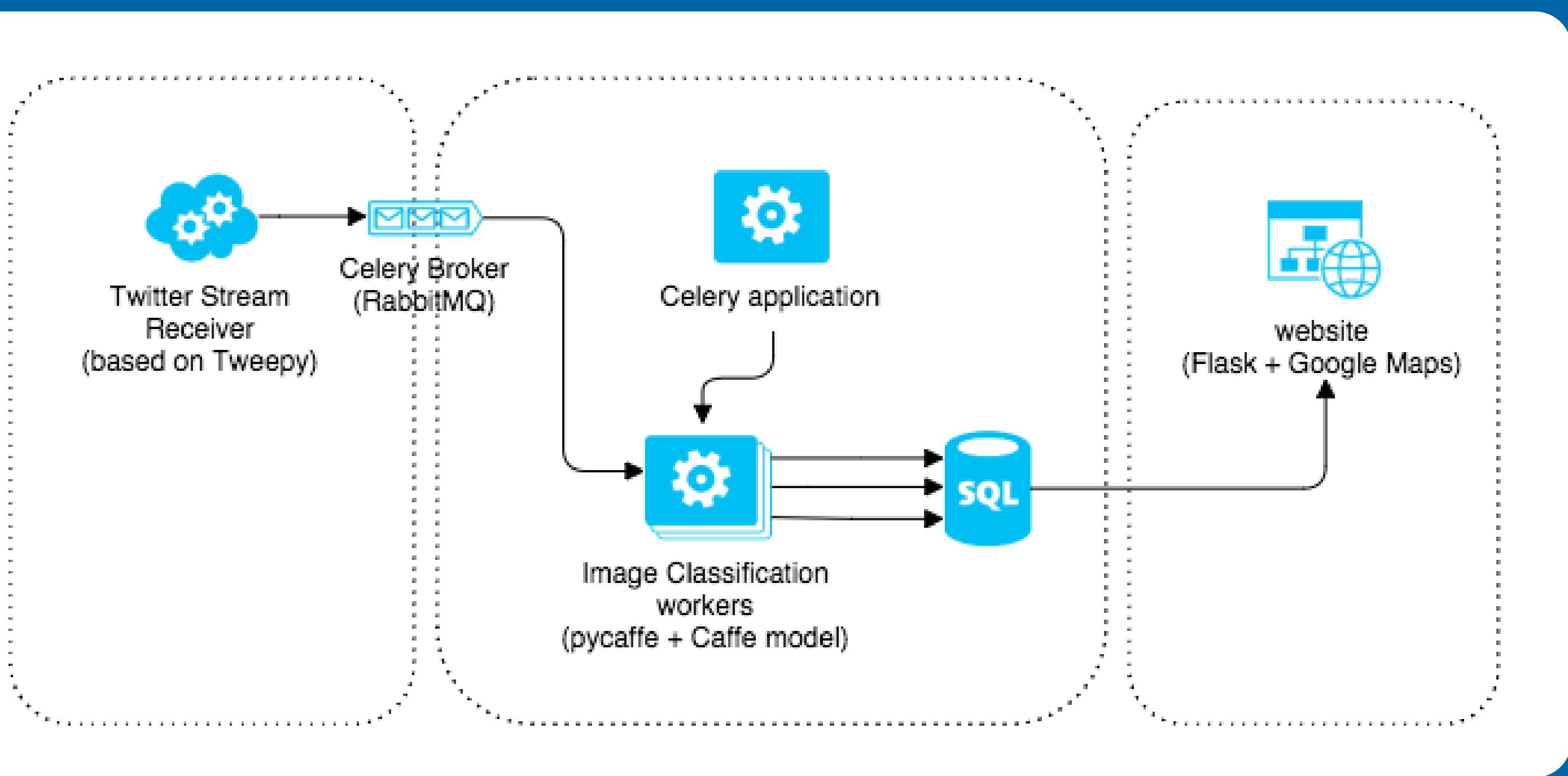
## Overview

This project was built in three days during Microsoft Research Russia Summer School “Doing Research in the Cloud” [1]. The idea of this project is to collect, analyze and visualize data from social network Twitter. It was build on Microsoft Azure platform and utilises most of it’s features such as: queues, blob storages, azure tables.

## Architecture of first version



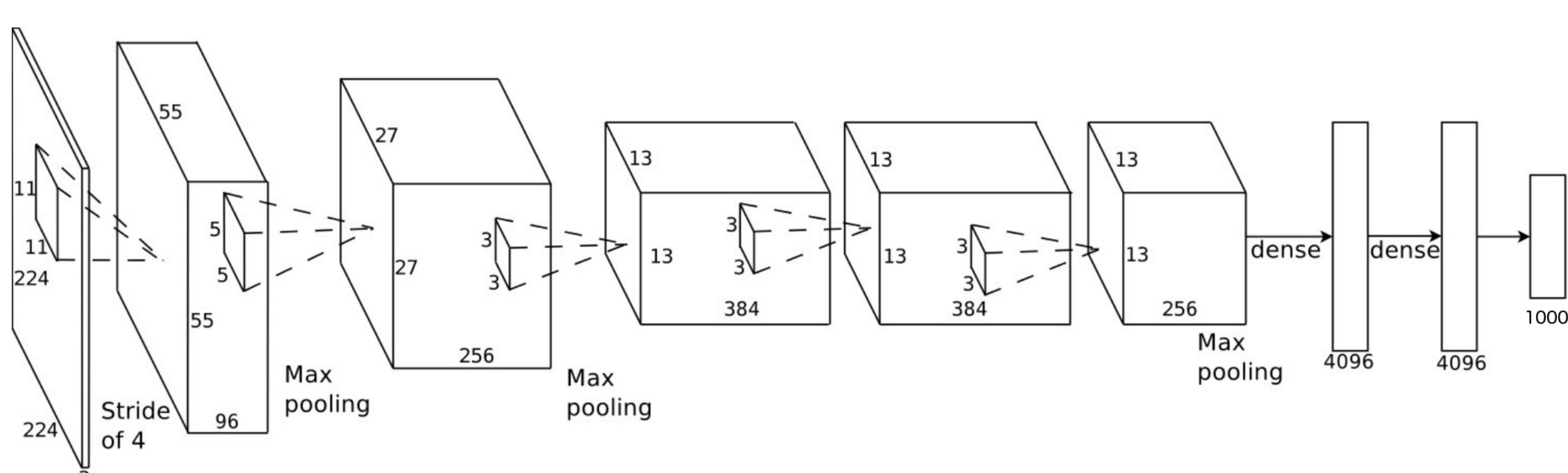
## Architecture of second version



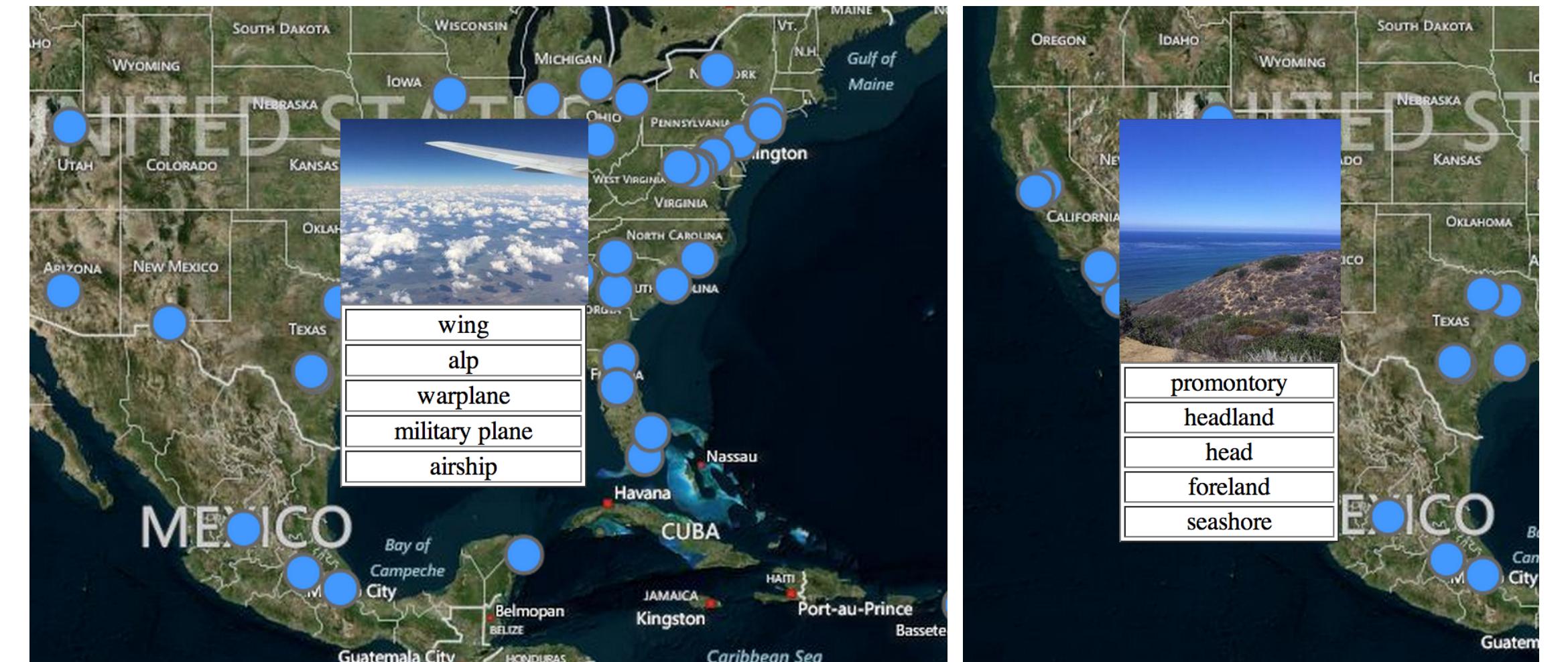
## Image classification

As classifier for images obtained from Twitter, deep convolutional neural network. Python library Caffe with prebuilt Caffe Reference ImageNet Model (implementation of an ImageNet model trained on ILSVRC-2012) were used.

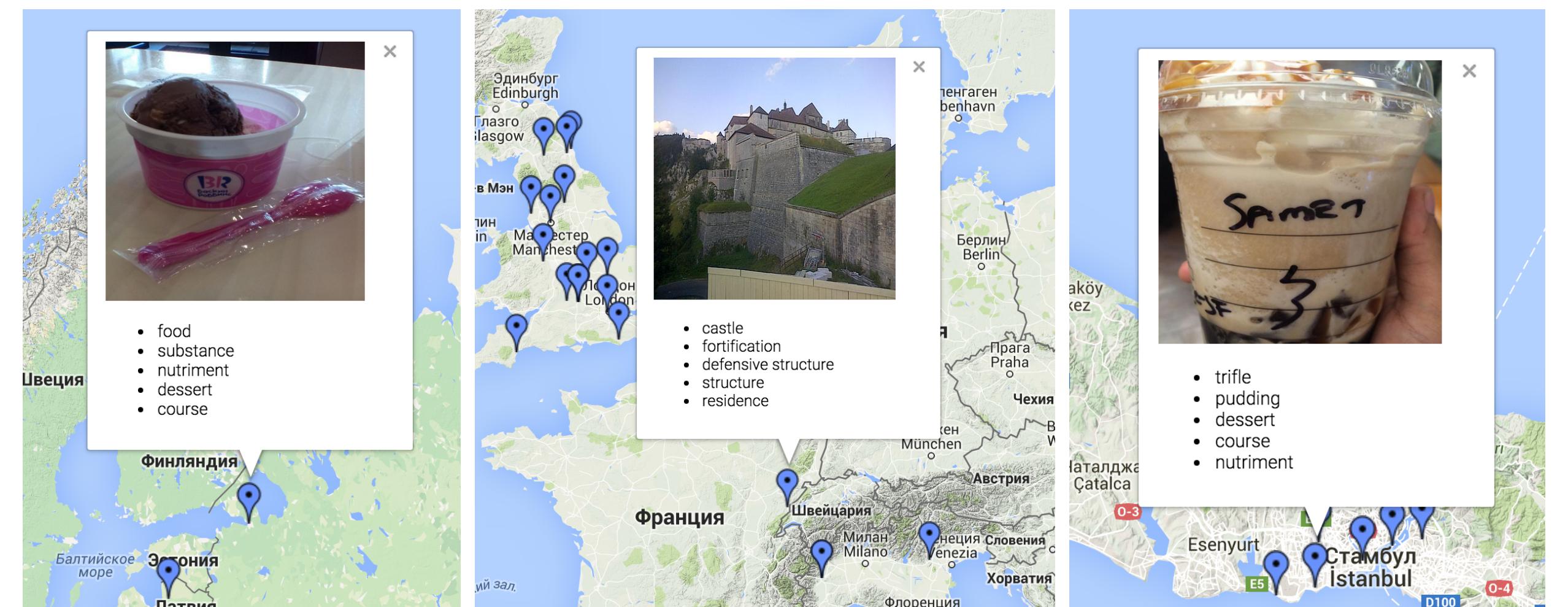
Here's short overview of this model: the best validation performance during training was iteration 358,000 with validation accuracy 57.258% and loss 1.83948. This model obtains a top-1 accuracy 57.1% and a top-5 accuracy 80.2% on the validation set. [2] Max-pooling layers follow first, second, and fifth convolutional layers. The number of neurons in each layer is given by 253440, 186624, 64896, 64896, 43264, 4096, 4096, 1000. [3]



## Web interface (first version)



## Web interface (second version)



## References

- [1] Microsoft research russia summer school “doing research in the cloud”. Accessed: 2014-08-18.
- [2] Yangqing Jia. Caffe: An open source convolutional architecture for fast feature embedding, 2013.
- [3] Alex Krizhevsky, Ilya Sutskever, and Geoffrey E. Hinton. Imagenet classification with deep convolutional neural networks. In F. Pereira, C.J.C. Burges, L. Bottou, and K.Q. Weinberger, editors, *Advances in Neural Information Processing Systems 25*, pages 1097–1105. Curran Associates, Inc., 2012.
- [4] E. Olivetti, S. M. Kia, and P. Avesani. MEG Decoding Across Subjects. *ArXiv e-prints*, April 2014.
- [5] F. Pedregosa, G. Varoquaux, A. Gramfort, V. Michel, B. Thirion, O. Grisel, M. Blondel, P. Prettenhofer, R. Weiss, V. Dubourg, J. Vanderplas, A. Passos, D. Cournapeau, M. Brucher, M. Perrot, and E. Duchesnay. Scikit-learn: Machine learning in Python. *Journal of Machine Learning Research*, 12:2825–2830, 2011.