Da

DATAKALAB

MVA INTERNSHIP – MIXMIX

Deep learning is now ubiquitous in predictive analysis and specially in the field of computer vision. However, it comes at a steep price in terms of energy consumption, hardware implements as well as training or inference runtimes. For these reasons, Datakalab specializes in low power, runtime efficient and privacy compliant deep learning solutions working on edge devices.

With a strong emphasis on research and development, Datakalab has a publication record in the main international machine learning and computer vision venues such as NeurIPS, CVPR, ICCV and AAAI.

YOUR MISSION

The goal of the internship is to investigate methods to recreate training data from a trained deep neural network (DNN). Examples of such methods are DeepInversion [1] and MixMix [2] which consists in optimizing a noise image to match a specific label and thus recreate valid training data. Such protocols can be used as building blocks of compression algorithms such as pruning or quantization.

YOUR ROLE

Your role as a research intern will be to implement MixMix and benchmark it on several scenarios, ranging from traditional computer vision benchmarks (e.g. CIFAR10/ImageNet classification) to practical problems (e.g. person detection in urban environments). You will then identify the limitations of the original framework and propose creative improvement to the method.

[1] Yin Hongxu and Molchanov Pavlo and Alvarez Jose M and Li Zhizhong and Mallya Arun and Hoiem Derek and Jha Niraj K and Kautz Jan Dreaming to distill : Data-free knowledge transfer via deepinversion CVPR 2020

[2] Li Yuhang and Zhu Feng and Gong Ruihao and Shen Mingzhu and Dong Xin and Yu Fengwei and Lu Shaoqing and Gu Shi MixMix : All You Need for Data-Free Compression Are Feature and Data Mixing ICCV 2021

SKILLS PROFILE

– Proficiency in Python
– Proficiency with Deep Learning libraries such as TensorFlow and PyTorch
– Good Understanding of Mathematics for Deep Learning

SUPERVISION

Supervised by our R&D team, composed of Arnaud Dapogny, researcher in computer vision, Kevin Bailly, researcher at Datakalab and associate professor at Sorbonne Université in machine learning and Edouard Yvinec, PhD student on neural networks acceleration. They published in major conferences such as ICCV, CVPR, NeurIPS and AAAI as well as journals such as TAC, TIP and IJCV.You will also be in contact with a group of developers.

WHEN AND WHERE?

– As soon as possible
– 114 Boulevard Malesherbes 75017
– Internship Salary : based on experience
– If you are looking for a Thesis after the internship, we are looking for your profile

Please contact us at ad@datakalab.com and lf@datakalab.com - www.datakalab.com