Neural Networks and Deep Learning: Part 3: Implementation issues

The first lecture is scheduled on April 16, 2024 - 9:00
Visit the course web page for registration and connecting to the channel. http://retis.sssup.it/~giorgio/courses/neural/nn.html

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Objectives: The aim of the part is to discuss practical and implementation issues useful to deploy neural networks on a variety of embedded platforms using different languages and development environments.

Course program

1. **Implementing Neural Networks from scratch in C.** General implementation principles. Implementing Reinforcement Learning (ASE/ACE and Q-learning). Implementing feed-forward networks.


3. **Functional components on autonomous driving.** Basic blocks for perception, prediction, planning, control, and actuation.


7. **DNN optimization for embedded platforms.** Weight quantization, pruning, distillation, to reduce execution times and contain memory footprints in resource constrained platforms.

8. **Accelerating deep networks on GPGPUs.** Overview of the Nvidia TensorRT framework. Executing a DNN modelled in Caffe in TensorRT.

9. **GPU-based real-time neural vision.** How to accelerate a neural network on TensorRT to detect objects from a video camera.

10. **Accelerating deep networks on FPGA.** Technologies and approaches.