

Projects

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Projects

- Implement Schraudolph's Online L-BFGS in Torch
- Implement/test Bottou's SGD-QN in Torch
- Implement and Compare step size schedules for SGD
- Implement/test DrLIM and/or WSABIE in Torch (parallelize if possible)
- Learn video features with sparse auto-encoder
- Learn video features with sparse predictive encoder-decoder
- Implement/test a parallelized "spaghetti" connection module in Torch
- Implement/test network sparsification schemes, such as OBD.
- Implement basic Torch modules in OpenCL
- Implement "tempered Monte-Carlo" methods to train deep nets on multiple machines
- Sparse coding with "cheap decoders"

Projects

- Sparse auto-encoder with complex hidden state
- “Tangent sparse coding” in which a point is the sum of a prototype and a linear combination of tangent vectors: L1 on prototypes, L2 on associated groups of components
- The descent direction is a linear combination of previous descent directions (like momentum and CG). Try to learn a generic set of coefficients that produce the best descent direction given the past ones.
- Implement Gregor's “what-where” auto-encoder in Torch
- Accelerate convolutional layers with the integral image (on bitplanes)