

CRUNCH Seminars at Brown, Division of Applied Mathematics

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**MorphNet: Fast & Simple Resource-Constrained Structure
Learning of Deep Networks**

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We present MorphNet, an approach to automate the design of neural network structures. MorphNet iteratively shrinks and expands a network, shrinking via a resource-weighted sparsifying regularizer on activations and expanding via a uniform multiplicative factor on all layers. In contrast to previous approaches, our method is scalable to large networks, adaptable to specific resource constraints (e.g. the number of floating-point operations per inference), and capable of increasing the network's performance. When applied to standard network architectures on a wide variety of datasets, our approach discovers novel structures in each domain, obtaining higher performance while respecting the resource constraint.