

4TU.AMI



MATHEMATICS FOR INNOVATION

4TU.AMI Conference

“Mathematics on Deep Learning”

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Gauge Equivariant Convolutional Networks

The principle of equivariance to symmetry transformations enables a theoretically grounded approach to neural network architecture design. Equivariant networks have shown excellent performance and data efficiency on vision and medical imaging problems that exhibit symmetries. Here we show how this principle can be extended beyond global symmetries to local gauge transformations. This enables the development of a very general class of convolutional neural networks on manifolds that depend only on the intrinsic geometry, and which includes many popular methods from equivariant and geometric deep learning.