



## Deep Neural Networks and Biological Vision

Deep learning is very important today as a tool to study neural circuits and as a model for visual perception. As a powerful new machine learning tool, it can be used to make sense of complex neural data of various kinds. Deep networks can also serve as abstractions of the visual processing hierarchy, which after training can be analyzed in very much the same way a biological circuit or intact observer would be. The successes and failures of this process teach us potentially important lessons about how natural visual input statistics interact with architectural and task constraints to yield neural representations, and ultimately behavior. The complexities entailed by trying to understand emerging representations in such large yet fully observed systems, can also illustrate the limitations of our traditional approaches, arguing for the need of new tools and conceptual frameworks for thinking about brain computations.

For this special issue we invite not only research papers but also opinion pieces and papers summarizing and arguing for or against the relevance of deep learning for vision science. We welcome explanations of how these tools can help. Authors may use any of the available article types, including regular, Review, Comment, Emerging trends in Vision Science, and Perspective.

### Feature Editors:

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