

Verifying Global Properties of Neural Networks

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Motivation

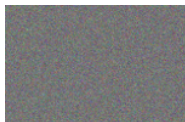
Formal verification of neural networks often focus on a local neighborhood of some input. Can we verify global properties too?

For example, we want to verify fire detection along a train track. Can we be sure that it is detected under all circumstances?



“fire” ✓

+ 0.007 ×



noise

=



“all good” ✗

Topics

Your tasks:

- Literature review on verifying global properties of neural networks:
 - Parameshwaran et al. “Scalable and explainable verification of image-based neural network controllers for autonomous vehicles.” 2025.
 - Simakov et al. “Summarizing visual data using bidirectional similarity.” 2008.
 - Wexler et al. “Space-time completion of video.” 2007.
 - ...

Interested? Contact me!

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