

TTIC 31230, Fundamentals of Deep Learning

David McAllester, Winter 2020

Double Descent

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Reconciling modern machine learning practice and the bias-variance trade-off

Mikhail Belkin, Daniel Hsu, Siyuan Ma, Soumik Mandal, arXiv December 2018.

Deep Double Descent: Where Bigger Models and More Data Hurt

Preetum Nakkiran, Gal Kaplun, Yamini Bansal, Tristan Yang, Boaz Barak, Ilya Sutskever, ICLR 2020

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Summary

There is never harm in doing early stopping — one should always do early stopping.

Regularization is any modification to the training algorithm motivated by reducing the training-validation gap.

While regularization modifications to training can be inspired by theory, the theory is weak.

Regularization proposals should be evaluated empirically.

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