

32nd Vienna Deep Learning Meetup



30th January 2020
#VDLM



Vienna Deep Learning Meetup



The Organizers:



Thomas Lidy
Musimap



Alex Schindler
AIT & TU Wien



Jan Schlüter
OFAI & contextflow



René Donner
contextflow

Topics for Today

Welcome & Introduction

Self-Supervised Deep Learning *by Christoph Bonitz, Njinn Technologies*

Announcements

<Break>

Report from NeurIPS 2019 *by René Donner, contextflow GmbH*

Hot Topics and Latest News *by Michael Pieler*

<Networking>



Takeda
Austria

August 2019

Austria Site Presentation



Better Health, Brighter Future

Takeda Austria

A significant site with a long heritage



**More than
4,000**
Employees



**Long tradition in
Austria**

Heilmittelwerke, Chemie
Linz, Immuno, Baxter,
Nycomed, Shire



**Fractionation of
3 Mio. Liter Plasma p.a.**

Vienna is one of the
largest fractionation sites
worldwide



Pathogen Safety
Global Center of Excellence
for Pathogen Safety



**Center for
Genetherapy**
in Orth an der
Donau



TOP

Pharmaceutical
Company in
Austria

11  **BioLife**
PLASMAZENTRUM

Plasma donation
centers in Austria

**More than
238 years**

Takeda History

**Whole value chain
in Austria**

R&D – plasma collection –
plasma fractionation – packaging –
distribution to more than 100
countries – supply & support in
Austria

Multi-Product Site Vienna

Manufacturing Vienna at a glance

2.800 Employees

Usable area in Vienna: 141.229 m²

Pharmaceutical Production



LA91

Polgarstrasse

Packaging, Warehouse, Floseal Production, Quality Control



Pharmaceutical Production

LA24

Donaustadtstrasse

Plasmalogistics



Purification



Donaustadtstrasse

BG

I51

Industriestrasse

LA8

I67

I131

Industriestrasse

Central Office



Plasma Analytics



I72

Pharmaceutical Production



Fractionation



12min
to
Pasetti-strasse



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Announcements

VDLM on Github

<https://github.com/vdlm/meetups>

- all talks
- slides
- photos
- videos
- Wiki

Meetups

#	Date	Place	Topic	Link	Video	Meetup.com
1	2016-04-07	Sector 5	intro	more		link
2	2016-05-09	Sector 5		more		link
3	2016-06-06	Sector 5		more		link
4	2016-07-07	TU Wien		more		link
5	2016-09-22	Automatic Software GmbH		more		link
6	2016-10-12	Sector 5		more		link
7	2016-12-01	Agentur Virtual Identity		more		link
8	2017-01-17	TU Wien Informatik		more		link
9	2017-02-21	bwin.party services (Austria) GmbH		more		link

Talks

Date	MU#	Speaker	Topic	Slides
2016-04-07	1	Thomas Lidy	An overview presentation of Deep Learning	pdf
2016-04-07	1	Jan Schlüter	History, Approaches, Applications	pdf
2016-05-09	2	Alex Champandard	Neural Networks for Image Synthesis	
2016-05-09	2	Gregor Mitscha-Baude	Recurrent Neural Networks	pdf
2016-06-06	3	Jan Schlüter	Open-source Deep Learning with Theano and Lasagne	pdf
2016-09-22	5	Josef Puchinger	Deep Learning & The Future of Automation	
2016-09-22	5	Christoph Körner	Going Deeper with GoogleNet and CaffeJS	pdf

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vdlm / meetups

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No description, website, or topics provided.

49 commits 1 branch 0 releases 2 contributors

Branch: master New pull request Create new file Upload files Find file Clone or download

slychief update photos Latest commit 20 days ago

Logo more content 25 days ago

Meetups update photos 20 days ago

README.md fixes 21 days ago

Vienna Deep Learning Meetup

Overview

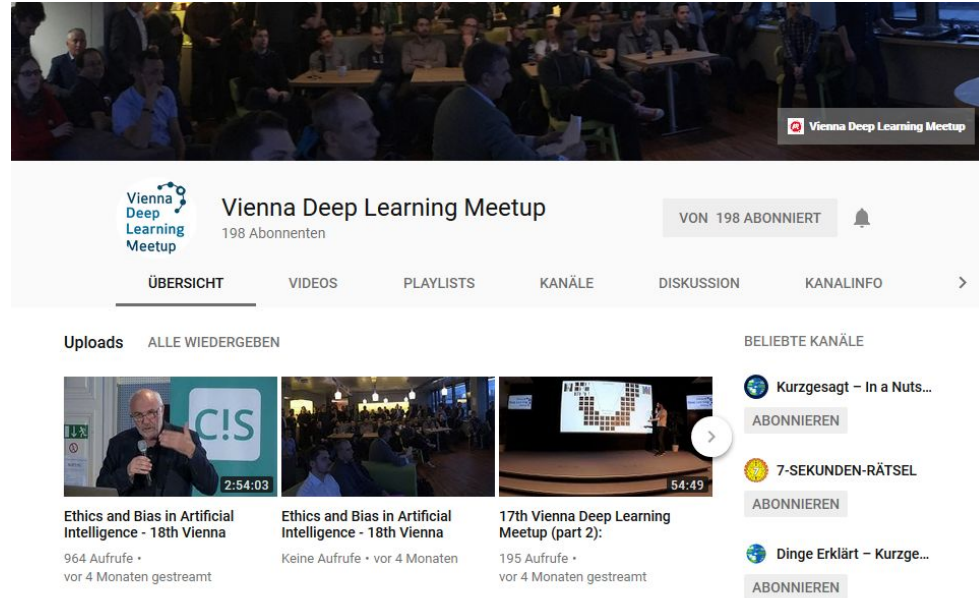
Deep Learning is currently a big & growing trend in data analysis and prediction - and the main fuel of a new era of AI. Google, Facebook and others have shown tremendous success in pushing image, object & speech recognition to the next level.

But Deep Learning can also be used for so many other things! The list of application domains is literally endless.

Although rooted in Neural Network research already in the 1950's, the current trend in Deep Learning is unstoppable, and new approaches and improvements are presented almost every month.

Deep Learning Meetup

VDLM Youtube Channel



The screenshot shows the YouTube channel page for Vienna Deep Learning Meetup. At the top is a banner image of a meetup event. Below it is the channel header with the logo, name, and subscriber count (198). Navigation tabs include Übersicht, Videos, Playlists, Kanäle, Diskussion, and Kanalinfo. The main content area shows a grid of video uploads and a list of recommended channels on the right.

Vienna Deep Learning Meetup
198 Abonnenten

VON 198 ABONNIERT

ÜBERSICHT VIDEOS PLAYLISTS KANÄLE DISKUSSION KANALINFO

Uploads ALLE WIEDERGEBEN

Beliebte Kanäle

- Kurzesagt – In a Nuts...
ABONNIEREN
- 7-SEKUNDEN-RÄTSEL
ABONNIEREN
- Dinge Erklärt – Kurzge...
ABONNIEREN

Videos:

- Ethics and Bias in Artificial Intelligence - 18th Vienna**
964 Aufrufe • vor 4 Monaten gestreamt
- Ethics and Bias in Artificial Intelligence - 18th Vienna**
Keine Aufrufe • vor 4 Monaten
- 17th Vienna Deep Learning Meetup (part 2):**
195 Aufrufe • vor 4 Monaten gestreamt

<https://www.youtube.com/ViennaDeepLearningMeetup>

Machine Learning Prague 2020

MARCH 20 - 22

1 000+

ATTENDEES

45

SPEAKERS

10

WORKSHOPS

eMail Raffle for 1 free ticket running until February 9th:

Which speaker of ML Prague 2020 is the creator of Keras?

send answer with subject "ML Prague 2020" to vd1meetup@gmail.com

Machine Learning Prague 2020

MARCH 20 - 22

1 000+

ATTENDEES

45

SPEAKERS

10

WORKSHOPS

Code 20% off - **vdsg20**

We're searching for a...

Lead Data Engineer

Hardware &
Enterprise Software

Become the spearhead of our data product initiatives



3 THINGS YOU WILL DO

Extract and **build data sets** from various applications to be easily analyzed by our data scientists.

Build and maintain **automated pipelines** with Python and Java

Actively **share your knowledge** and lessons learned with other teams and departments across the globe

3 THINGS YOU BRING

Experience in building data pipelines, data sets, and defining the data architecture

Hands-on mentality, excellent problem-solving skills, and critical thinking

Experience **working with data scientists** and a good understanding of their needs

3 THINGS YOU GET

A flat organization with **personal development** opportunities

An **international work environment** with global collaboration opportunities

Very **competitive salary** with equity awards on top.

Interested?

<https://cd.automic.com/lead-data-engineer/>

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Hot Topics & Latest News

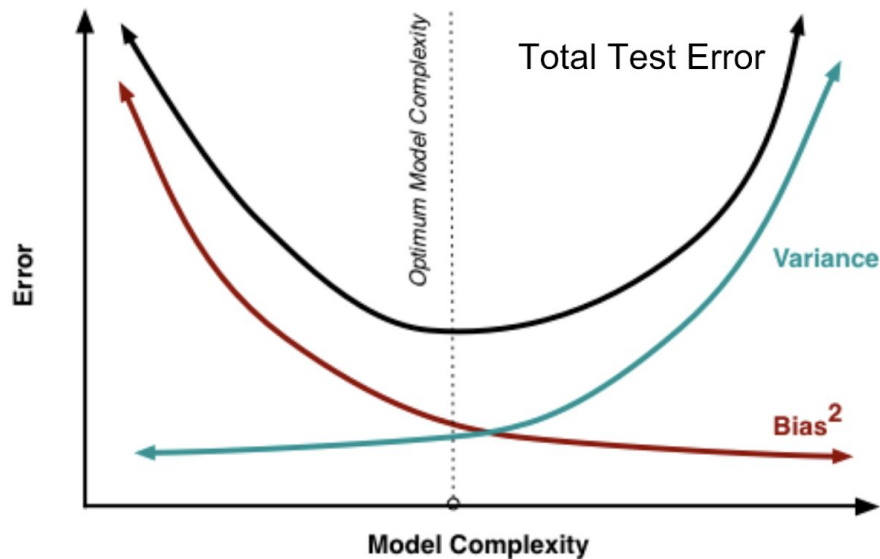
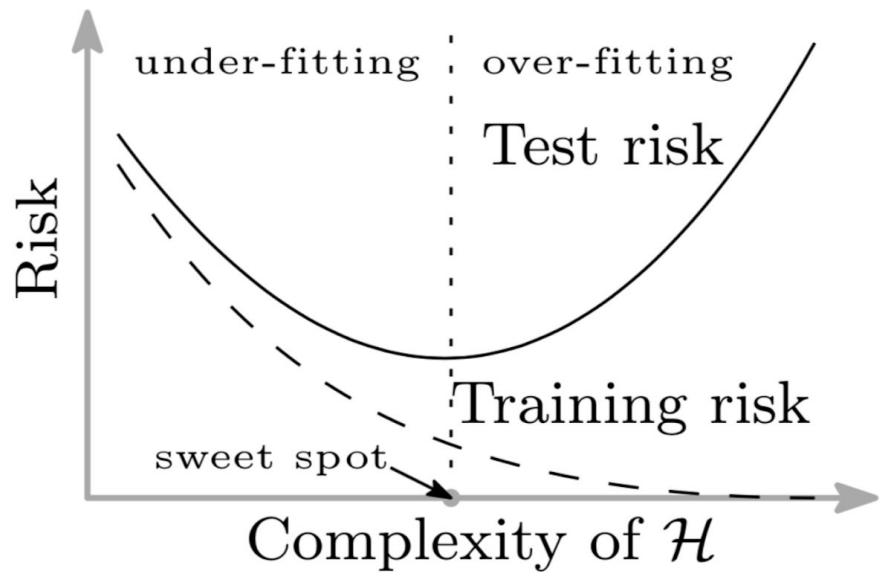
a short block at every meetup
to briefly present recent papers and news in Deep Learning

Send us contributions (tom.lidy@gmail.com)
or come with slides to do a short block yourself!

Are deep NN
(dramatically)
overfitted?

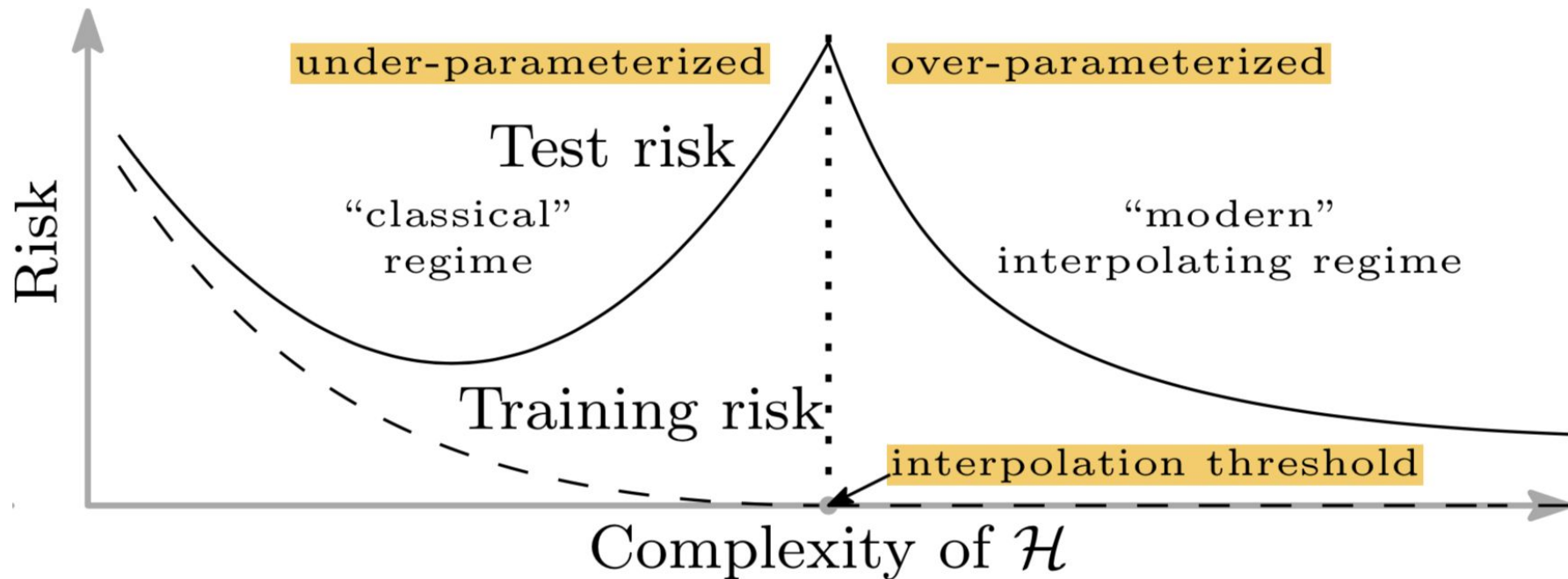
Deep Double Descent & Lottery Ticket Hypothesis

Traditional risk curve & bias-variance trade-off

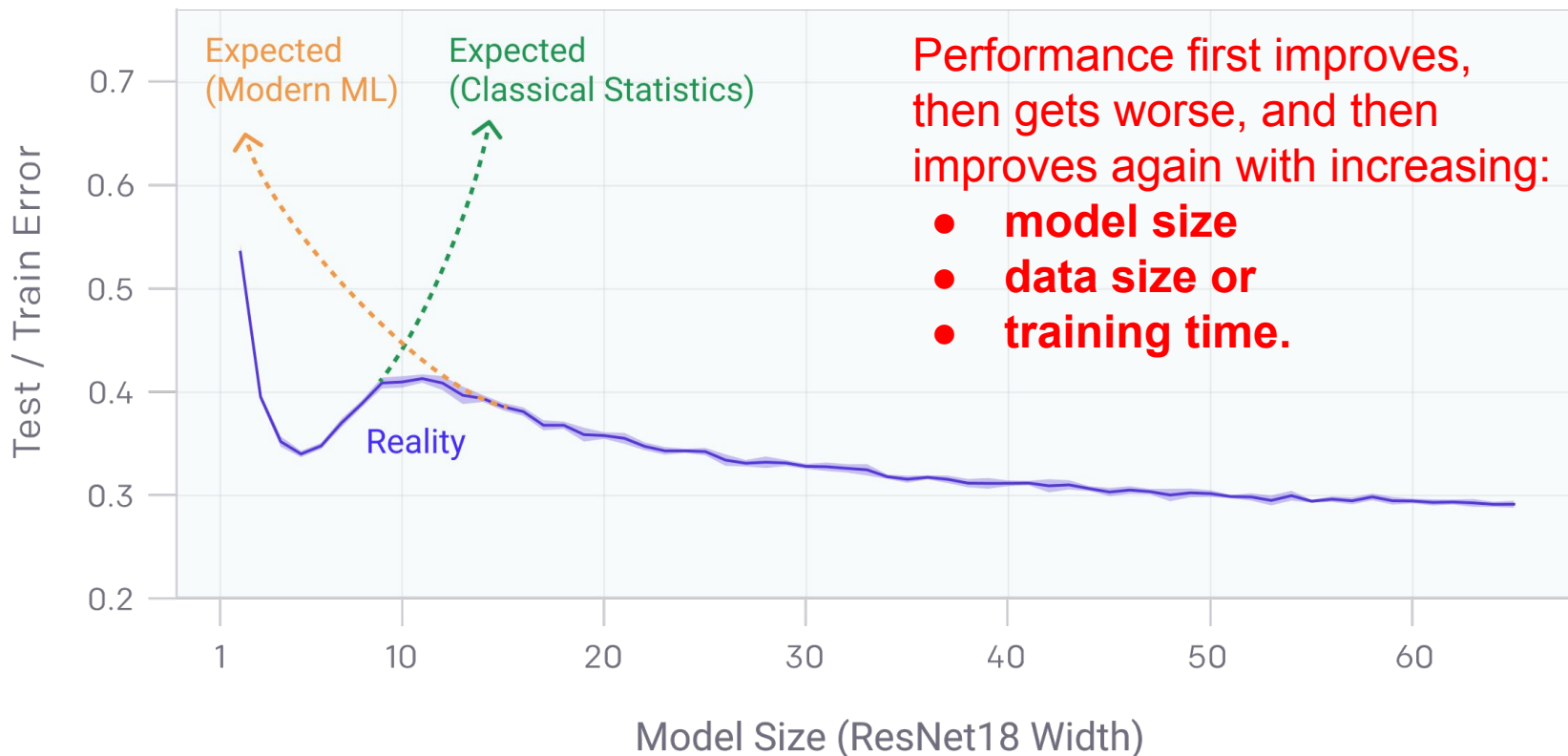


Traditional machine learning uses a U-shape risk curve to measure the bias-variance trade-off and quantify how generalizable a model is.

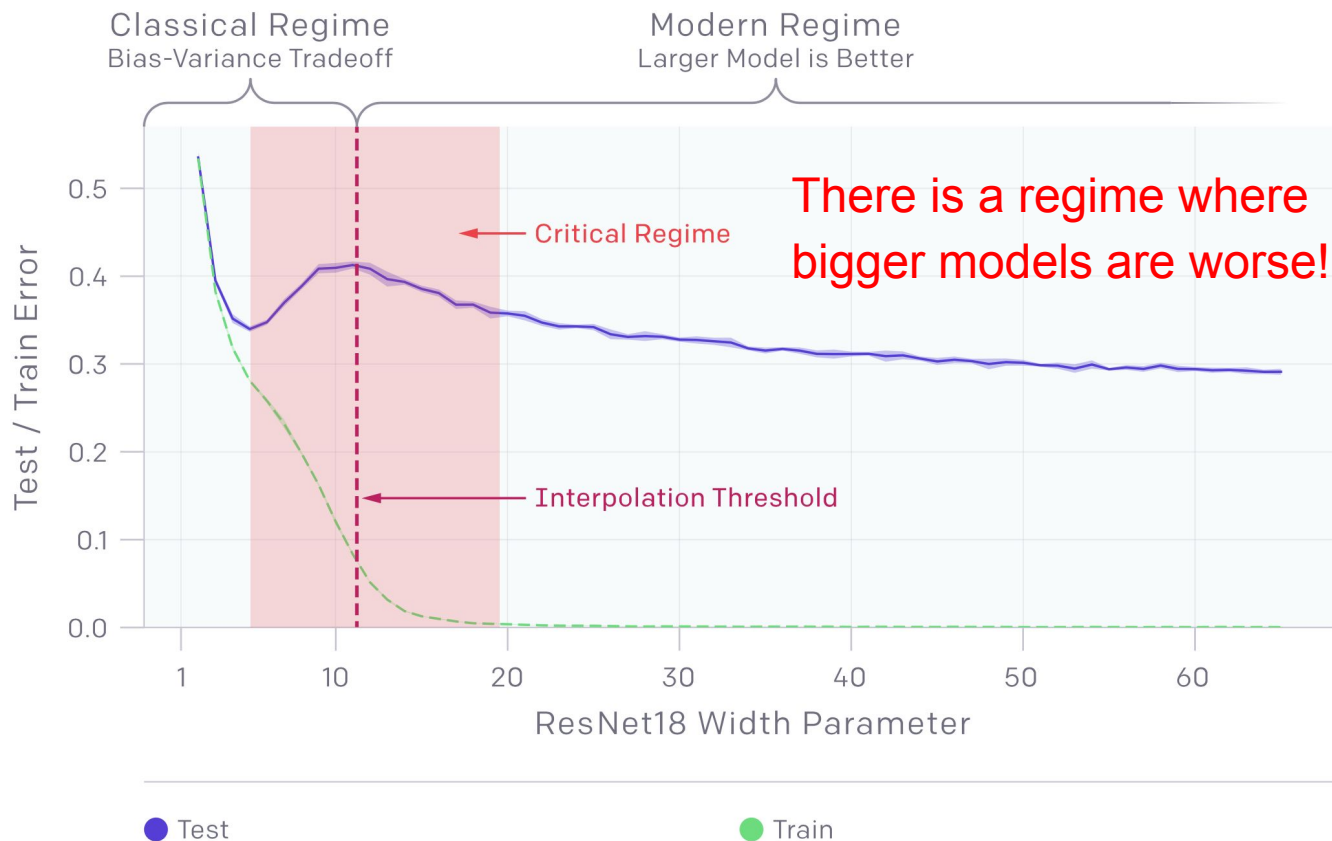
New double-U-shaped bias-variance risk curve for deep NN



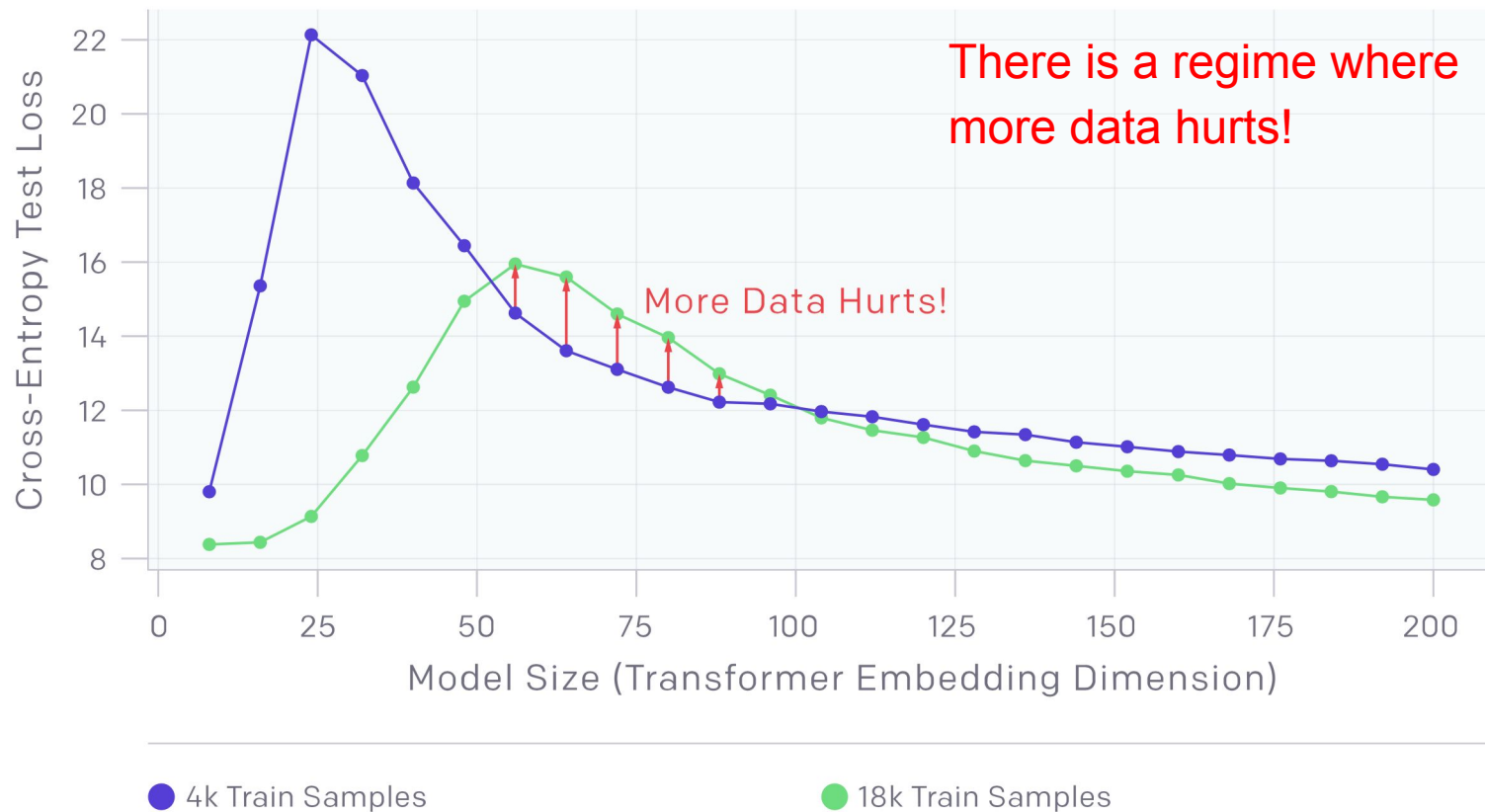
Deep Double Descent?



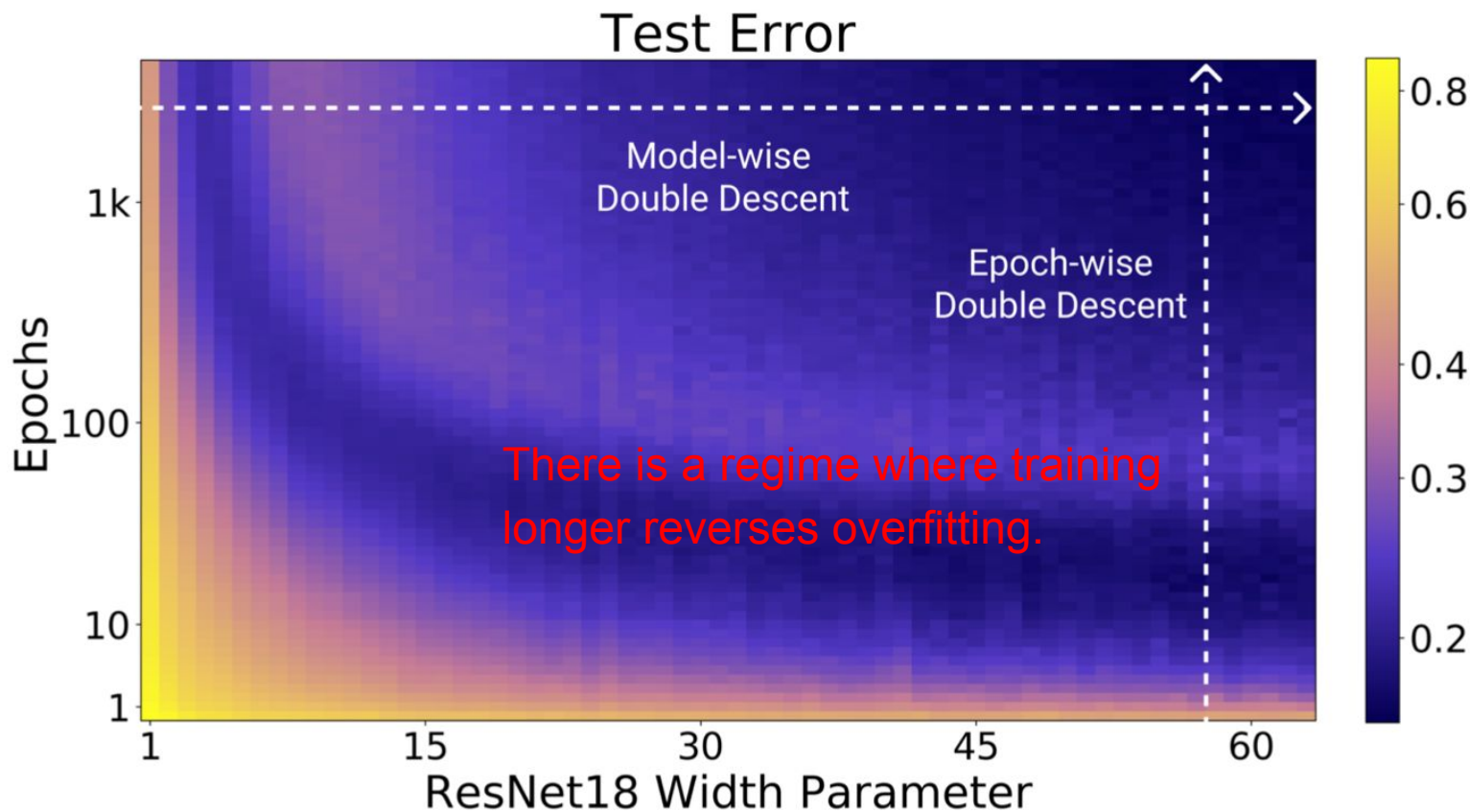
Model-wise double descent



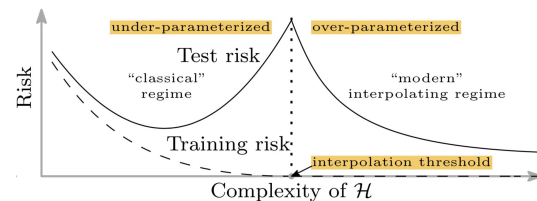
Sample-wise non-monotonicity



Epoch-wise double descent



Intuition?



At the interpolation threshold, there is effectively only one model that fits the train data, and forcing it to fit even slightly noisy or misspecified labels will destroy its global structure. There are no "good models" which both interpolate the train set and perform well on the test set.

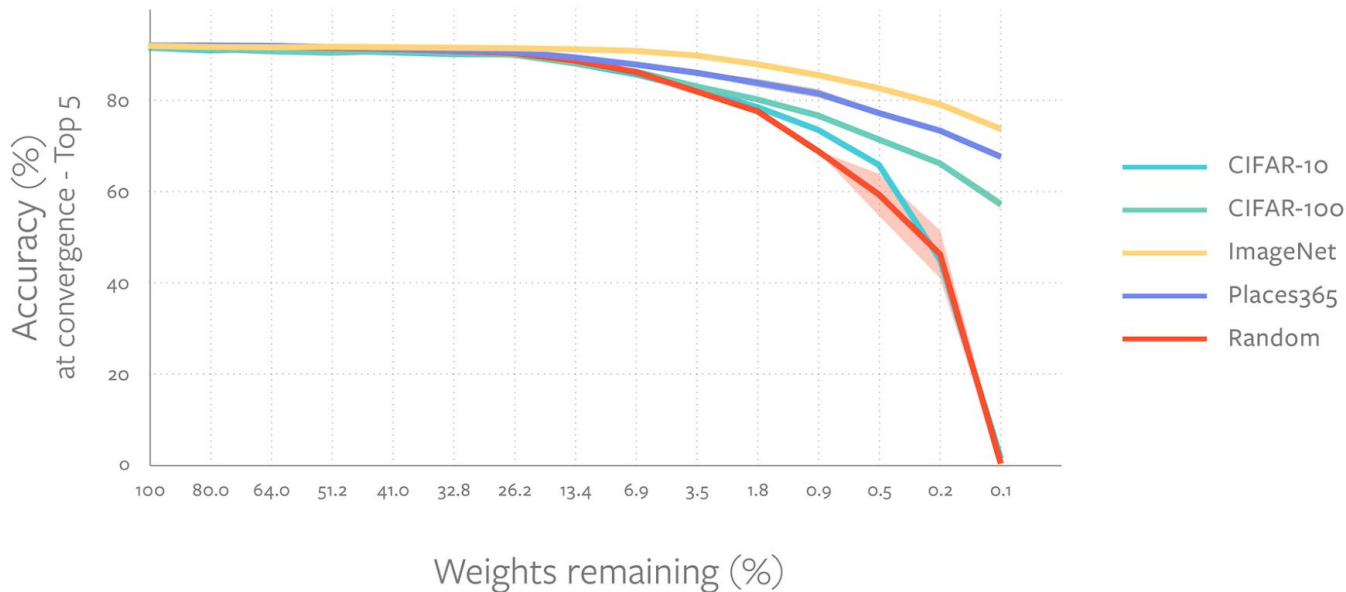
In the over-parameterized regime, there are many models that fit the train set and there exist such good models.

The implicit bias of stochastic gradient descent (SGD) leads it to such good models, for reasons we don't yet understand.

Lottery ticket hypothesis

[Click for FAIR blog post with video.](#)

Generalization of winning tickets?



Each line represents a different source dataset for the winning ticket.

Winning tickets generated on ImageNet and Places365 consistently outperformed those generated on smaller datasets on ImageNet.

Sources:

<https://lilianweng.github.io/lil-log/2019/03/14/are-deep-neural-networks-dramatically-overfitted.html>

<https://openai.com/blog/deep-double-descent/>

<https://www.lesswrong.com/posts/FRv7ryoqtvSuqBxuT/understanding-deep-double-descent>

<https://ai.facebook.com/blog/understanding-the-generalization-of-lottery-tickets-in-neural-networks/>

Vienna Deep Learning Meetup



Next Meetup:
February 26 at Magenta

www.meetup.com/Vienna-Deep-Learning-Meetup