

26th Vienna
Deep Learning
Meetup



29th April 2019 @ WKO
#VDLM



Vienna Deep Learning Meetup

The Organizers:



René Donner
contextflow



Thomas Lidy
Musimap



Alex Schindler
AIT & TU Wien



Jan Schlüter
OFAI & UTLN



Introduction

Matthias Grabner, WKO Aussenwirtschaft

Continuous Integration and Deployment for Machine Learning Applications

Simon Stiebellehner, Head of AI and Bernhard Redl, Data Engineer, craftworks GmbH

Break

Computer Vision Models in Production

Jakob Klepp, App Engineer Computer Vision, MoonVision

Hot Topics & latest News

René Donner and Jan Schlüter

Networking and Discussion

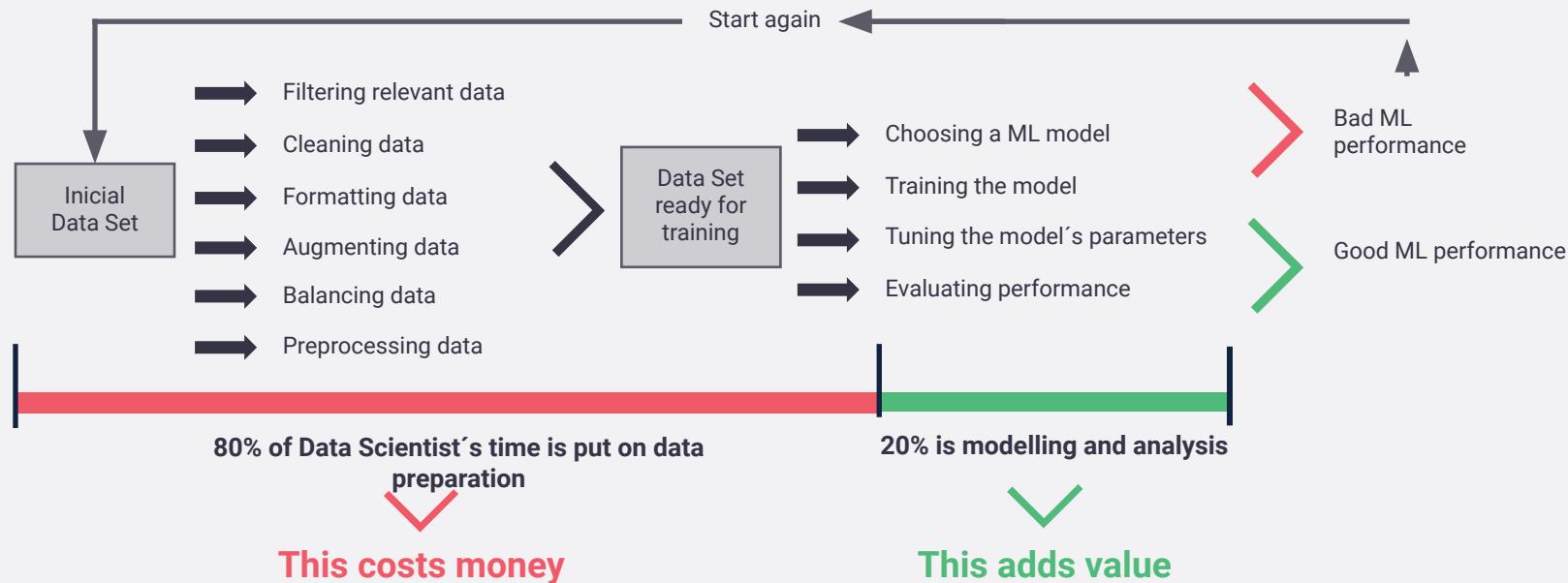
Announcements



The ideal nurturing ground
for creating the best
machine learning projects.

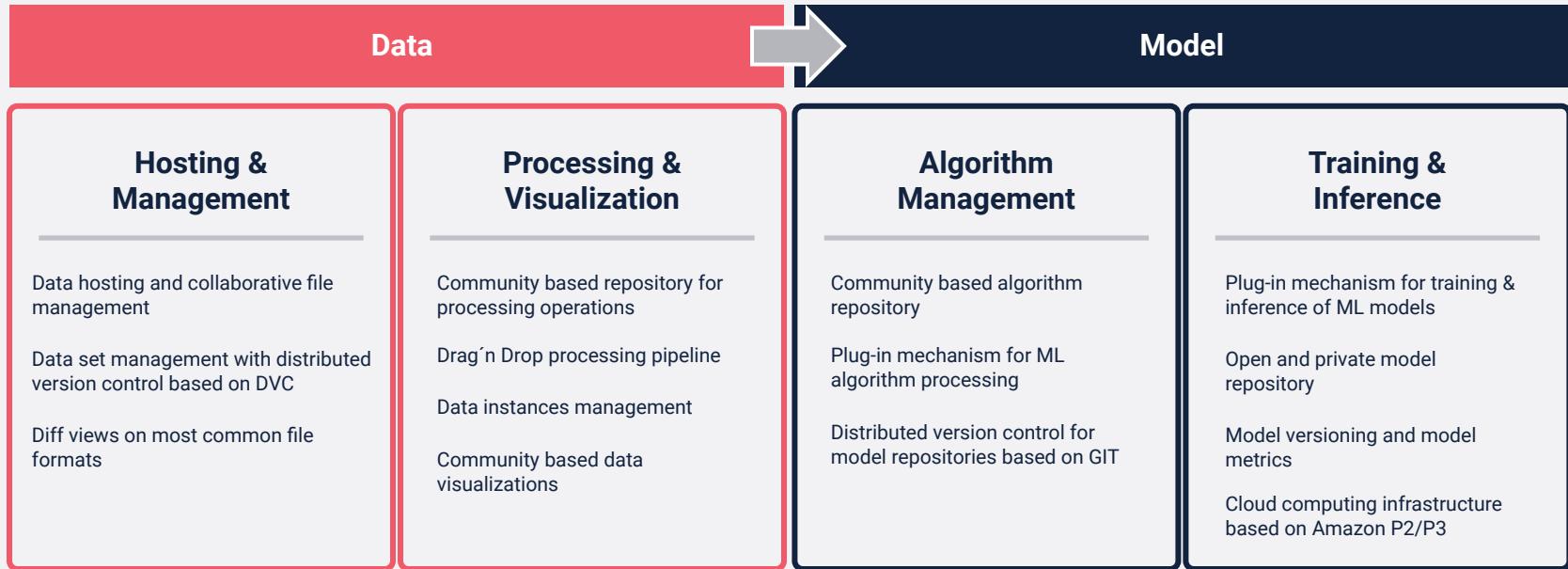


**mlreef offers deep collaboration and version control for data
and models to increase efficiency in Machine Learning
projects.**



mlreef

core components





www.mlreef.com

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Women in AI

Women in AI (WAI) is a non profit working towards a gender-inclusive AI that benefits global society.

Our mission is to increase female representation and participation in AI.



AI is the extension of its creator
and is shaping tomorrow's society

A photograph of a vast desert landscape with rolling sand dunes under a clear blue sky, serving as the background for the text.

Yet, only 22% of AI professionals
globally are female

<http://reports.weforum.org/global-gender-gap-report-2018/assessing-gender-gaps-in-artificial-intelligence/>

@women_in_ai | @carina1948 | #wai | #wai_austria



Community at the core



The first global community of women professionals
and experts in AI

1500+
members

80
countries

25
Ambassadors



Activities



Community



Events



Education



Publications
& Research



Join womeninai.co



ABOUT WAI NEWS & EVENTS BECOME A PARTNER

WOMEN IN AI

BRINGING ALL MINDS TOGETHER

BECOME A MEMBER

@women_in_ai | @carina1948 | #wai | #wai_austria



Carina Zehetmaier

WAI Ambassador in Austria //
Diplomacy // Legal and Political
Consultant



@women_in_ai | @carina1948 | #wai | #wai_austria





https://www.meetup.com/de-DE/Women-in-AI-Austria/



[Neue Gruppe gründen](#)

Entdecken

Nachrichten

Updates



Foto ändern

WOMEN IN AI
BRINGING ALL MINDS TOGETHER

BECOME A MEMBER

Women in Artificial Intelligence Austria

Wien, Österreich

6 Mitglieder · Öffentliche Gruppe

Organisiert von Carina zehetmaier

Teilen: [Facebook](#) [Twitter](#) [LinkedIn](#) [Share](#)

Über uns

Events

Mitglieder

Fotos

Diskussionen

Mehr

Gruppe verwalten

Neuer Termin



WaiTALK

AI in Diplomacy & International Relations

Vienna |  | June 26th, 2019

womeninai.co | #wai | #waitalk | #wai_austria



Thank you for your attention!

Please reach out to me:

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<https://www.linkedin.com/in/carina-zehetmaier-b60925b4>

<https://www.meetup.com/de-DE/Women-in-AI-Austria/>

@Carina1948

AUSTRIA IST ÜBERALL.



AI is here.
Let's make it work
for your business!

B2B PLATTFORM APPLIED ARTIFICIAL INTELLIGENCE CONFERENCE

VIENNA

27.05.2019 | 09-20h





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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!

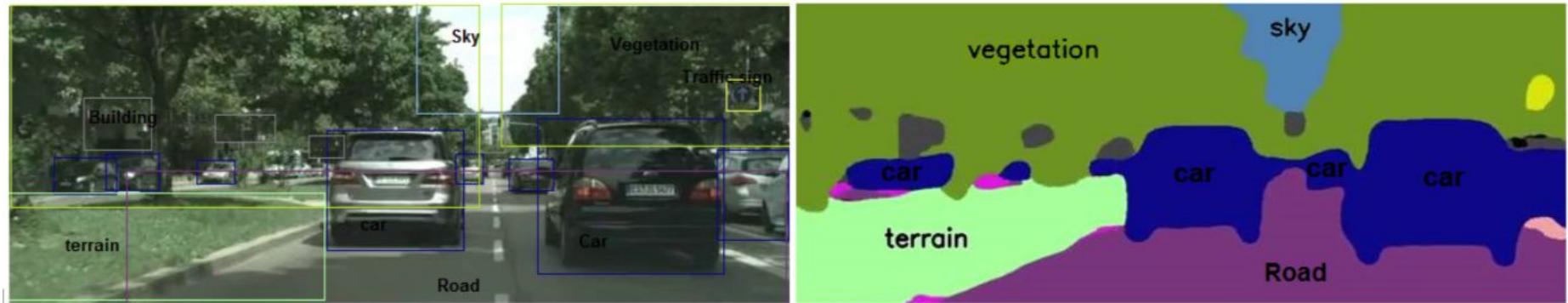
Hot Topics

Semantic Segmentation Review
Stylized-ImageNet / Shape-ResNet

Semantic Segmentation Review Paper

Survey on Semantic Segmentation using Deep Learning Techniques

Fahad LATEEF¹, Yassine RUICHEK¹



Semantic Segmentation Review Paper

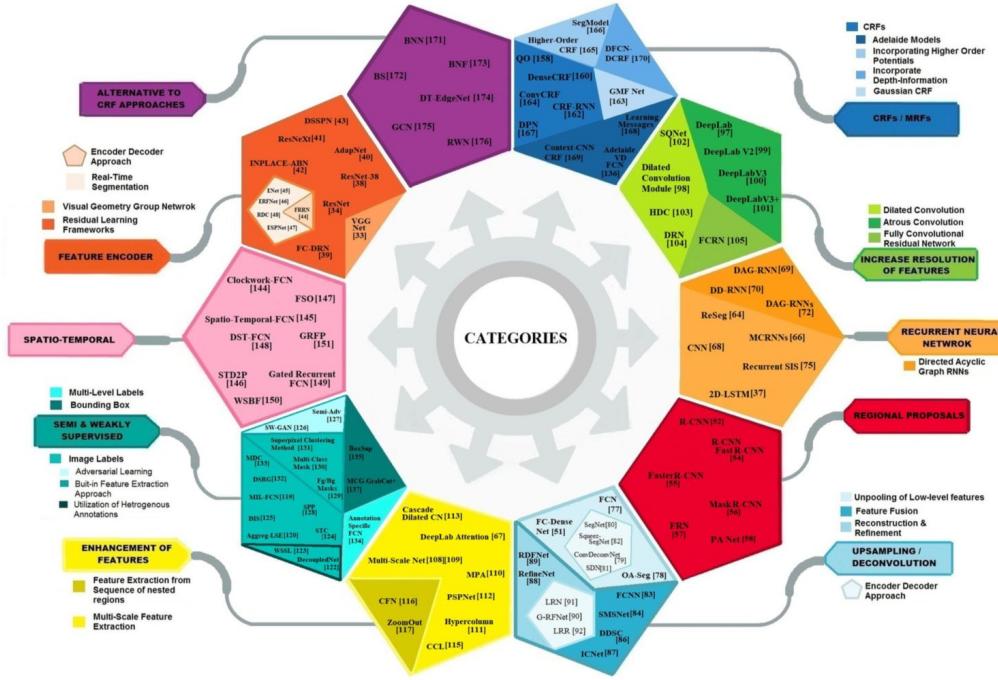
Feature Encoder Based Methods
Regional Proposal based Methods
Recurrent Neural Network based Methods

Upsampling / Deconvolution based Methods
Increase Resolution of Feature based Methods
Enhancement of Features based Methods

Semi and Weakly Supervised Concept
Spatio-Temporal based Methods

Methods using CRF / MRF
Alternative to CRF

Datasets and Evaluation for Deep Learning
techniques



Semantic Segmentation Review Paper

Table 7: Enhancement of Features based Methods

Category	Strategy / Structure	Corpus	Original Architecture	Testing Benchmark	Published on	Code Available
Enhancement of Features	Multi-scale Features Extraction	Multi-Scale Network [108][109]	LeNet	Sift Flow, Barcelona, Stanford Background	October 24, 2012	-
		Learn multi-scale features using the image depth information.	LeNet	NYUDv2	March 14, 2013	-
		Multi-scale Patch Aggregation (MPA) [110]	VGG-16	PASCAL VOC, COCO	June 1, 2016	-
		Hypercolumns [111]	Tested with R-CNN	PASCAL VOC	November 22, 2014	-
		DeepLab Attention Model [67]	DeepLab	PASCAL VOC, COCO	June 1, 2016	-
		Pyramid Scene Parsing Network (PSPNet) [112]	ResNet Dilated FCN	ImageNet, Cityscapes, ADE20K, PASCAL VOC	April 25, 2017	YES
		Cascade Dilated Convolutions Network [113]	Dilated-ResNet FCN-VGG	PASCAL VOC	February 21, 2018	-
	Context Contrasted Local (CCL) Model [115]	CCL: Consists of several chained context-local blocks; make multi-level context contrasted local features. Gate Sum: Fusion strategy to aggregate appropriate score maps.	ResNet	Pascal Context, SUN-RGBD, COCO Stuff	June 18, 2018	-
Feature Extraction from sequence of nested regions	Cascaded Feature Network (CFN) [116]	Context-aware Receptive Field (CaRF): to aggregate convolutional features of local context into strong features.	FCN + RefineNet	NYUDv2, SUN-RGBD	December 25, 2017	-
	Zoom Out [117]	Zoom out features construction using superpixels (SLIC Method) from different levels of spatial context Local Level: Superpixel itself Distant Level: Regions large enough to cover fractions of an object or entire object. Scene Level: Entire scene Combining features across levels rather than predicting.	VGG-16	PASCAL VOC	December 2, 2014	-

Stylized-ImageNet / Shape-ResNet

Stylized-ImageNet / Shape-ResNet – ICLR 2019 Oral Presentation

IMAGENET-TRAINED CNNS ARE BIASED TOWARDS TEXTURE; INCREASING SHAPE BIAS IMPROVES ACCURACY AND ROBUSTNESS

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Stylized-ImageNet / Shape-ResNet



(a) Texture image
81.4% **Indian elephant**
10.3% indri
8.2% black swan



(b) Content image
71.1% **tabby cat**
17.3% grey fox
3.3% Siamese cat



(c) Texture-shape cue conflict
63.9% **Indian elephant**
26.4% indri
9.6% black swan

Stylized-ImageNet / Shape-ResNet

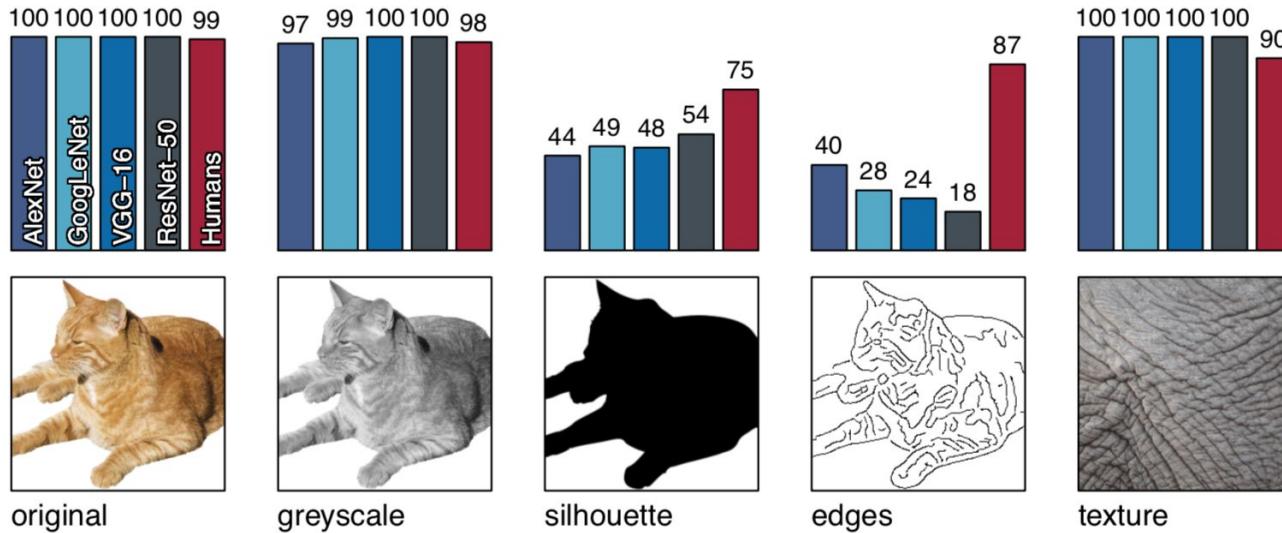
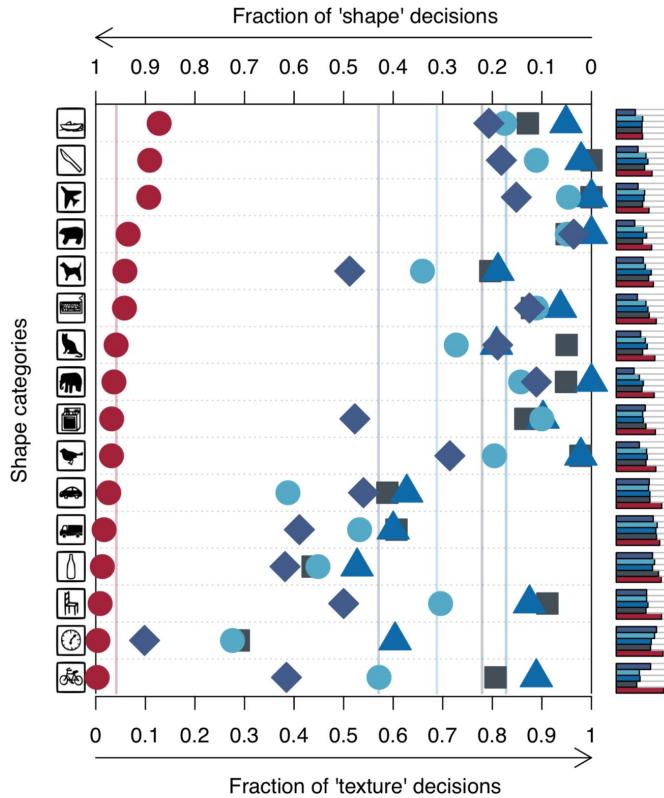


Figure 2: Accuracies and example stimuli for five different experiments without cue conflict.

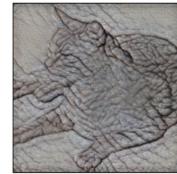
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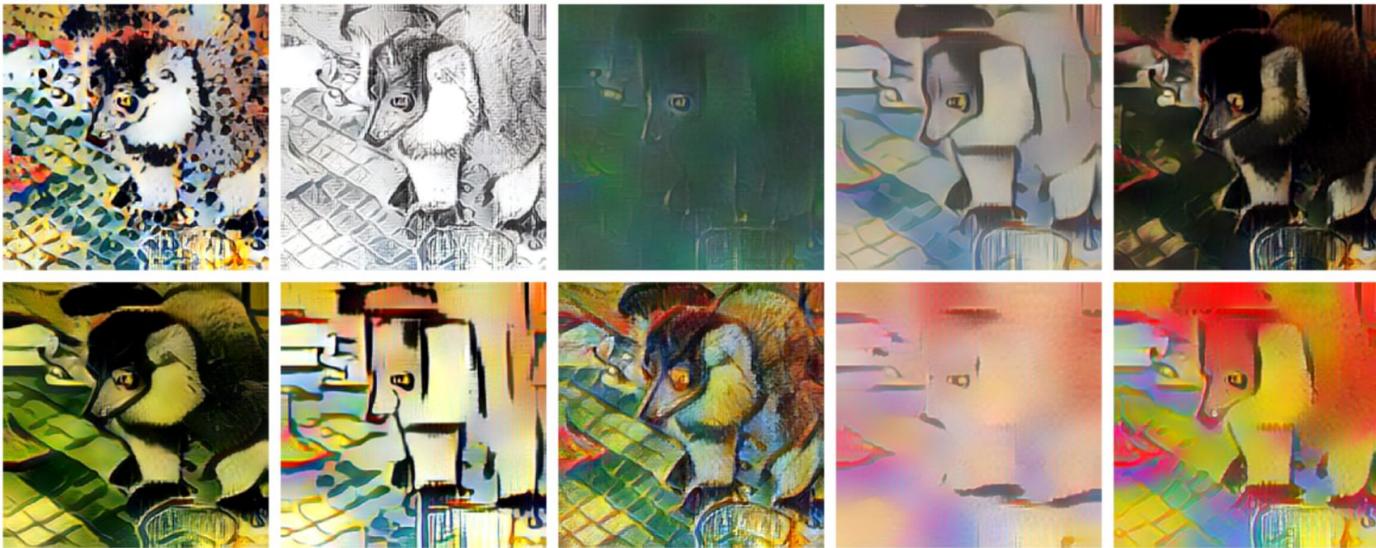


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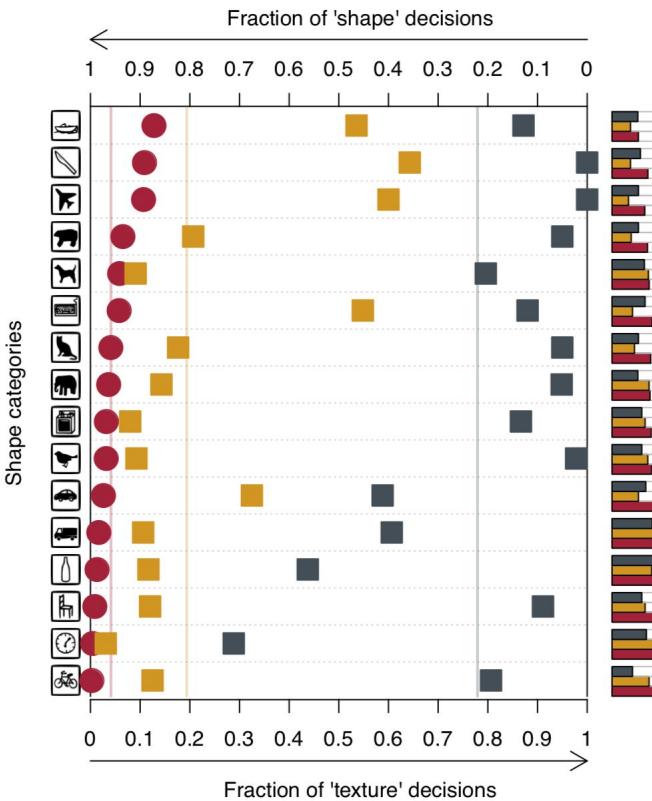
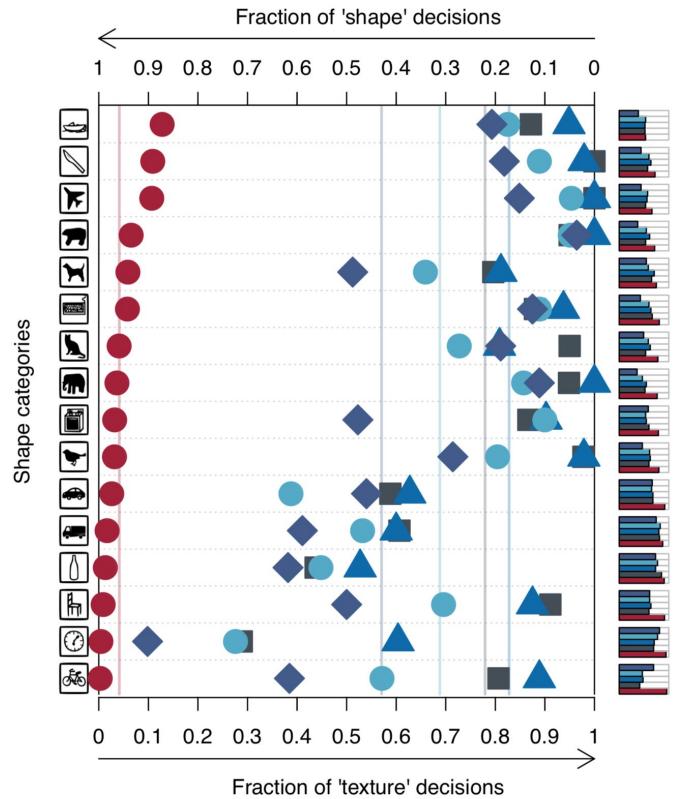


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Stylized-ImageNet / Shape-ResNet



Stylized-ImageNet / Shape-ResNet



Stylized-ImageNet / Shape-ResNet

name	training	fine-tuning	top-1 IN accuracy (%)	top-5 IN accuracy (%)	Pascal VOC mAP50 (%)	MS COCO mAP50 (%)
vanilla ResNet	IN	-	76.13	92.86	70.7	52.3
	SIN	-	60.18	82.62	70.6	51.9
	SIN+IN	-	74.59	92.14	74.0	53.8
Shape-ResNet	SIN+IN	IN	76.72	93.28	75.1	55.2

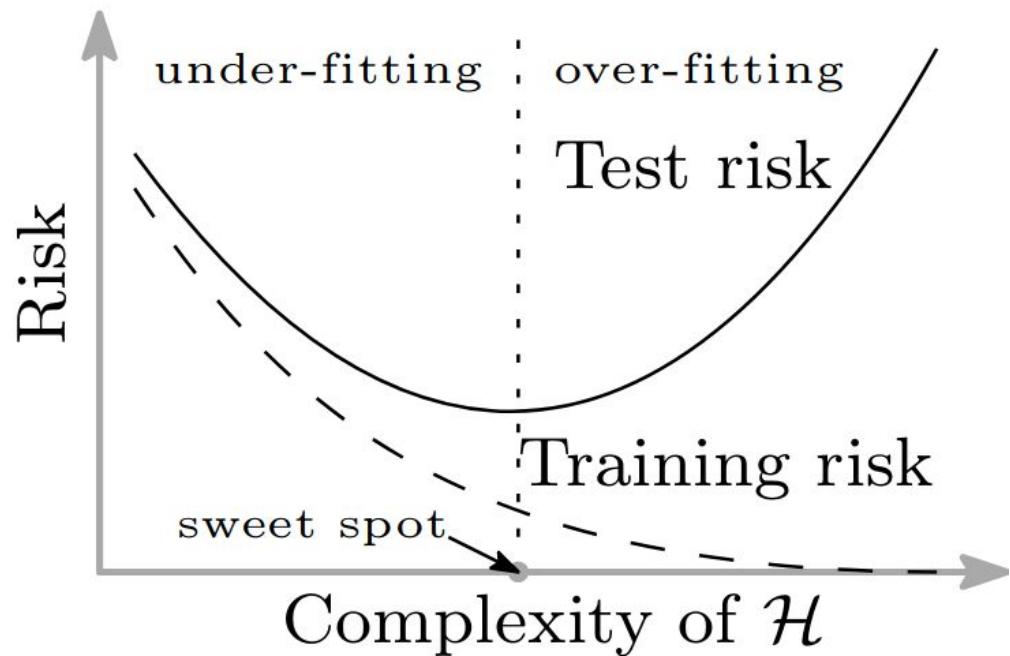
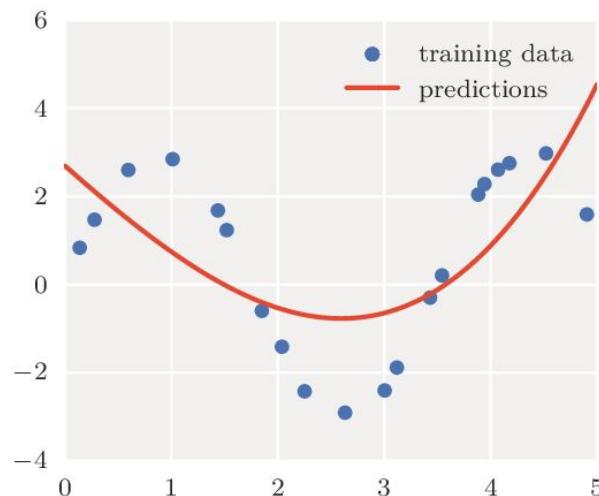
Hot Topics

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

Short mentions / Teaser

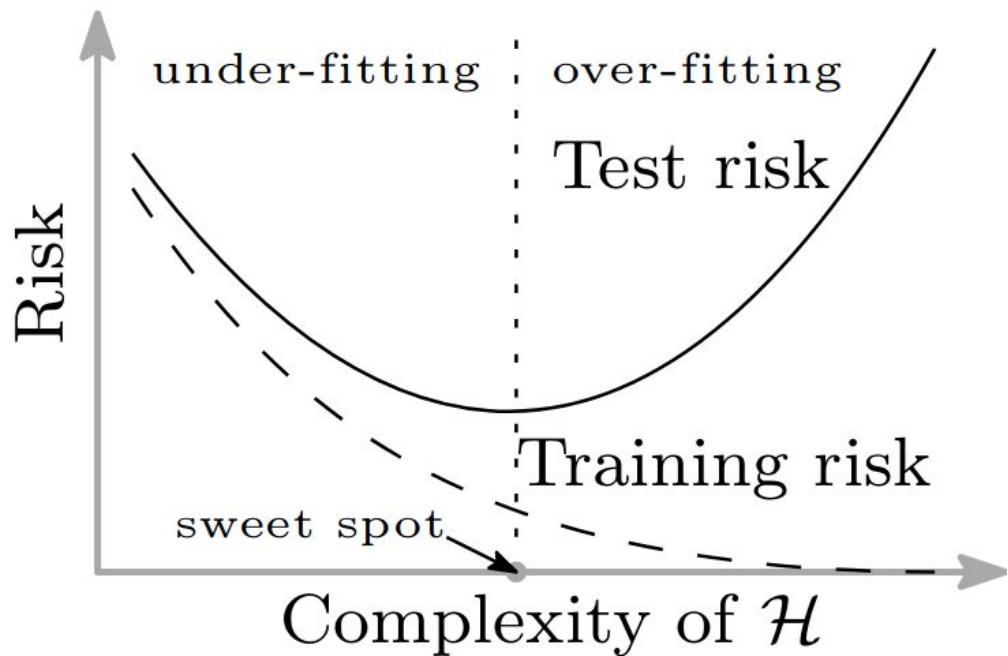
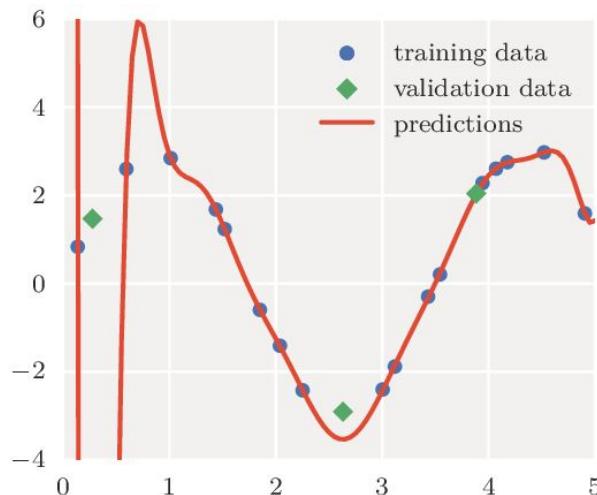
Overcomplete models and the bias/variance tradeoff

- Classical view:
 - Too simple model underfits



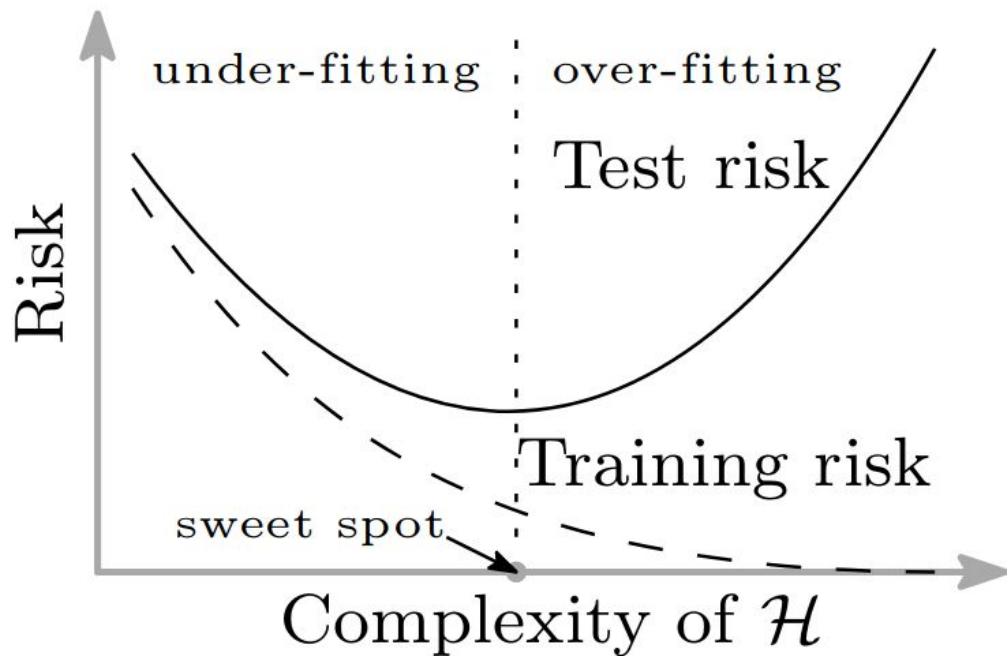
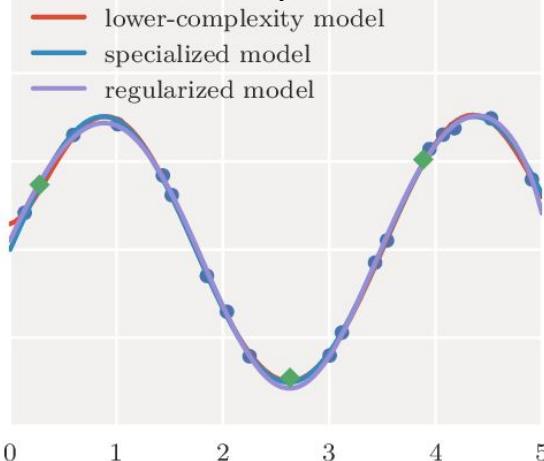
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- Classical view:
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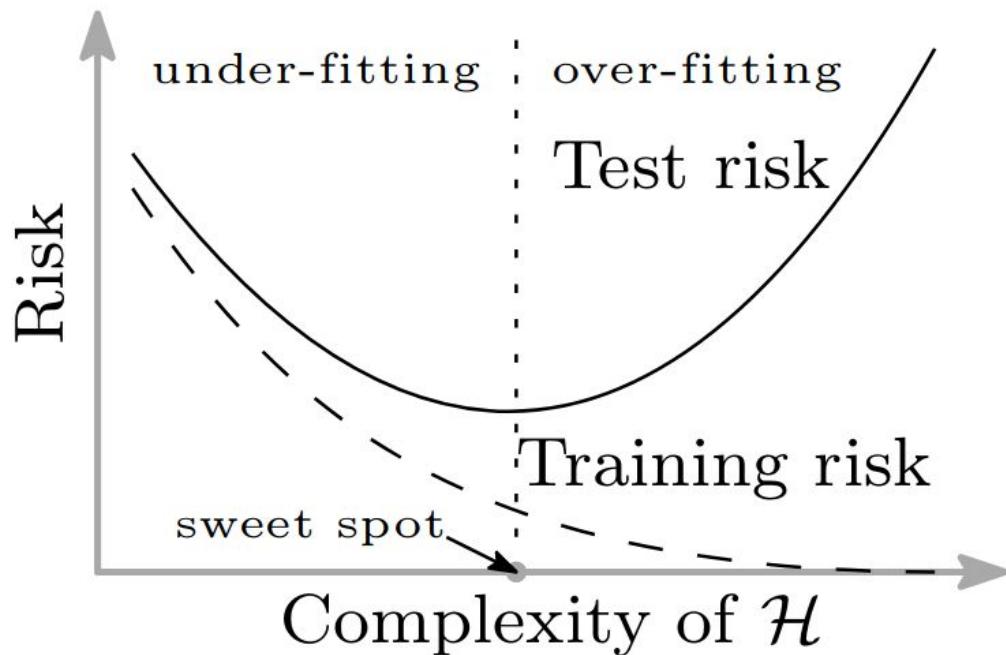
Overcomplete models and the bias/variance tradeoff

- Classical view:
 - Too simple model underfits
 - Too complex model overfits
 - Sweet spot in between

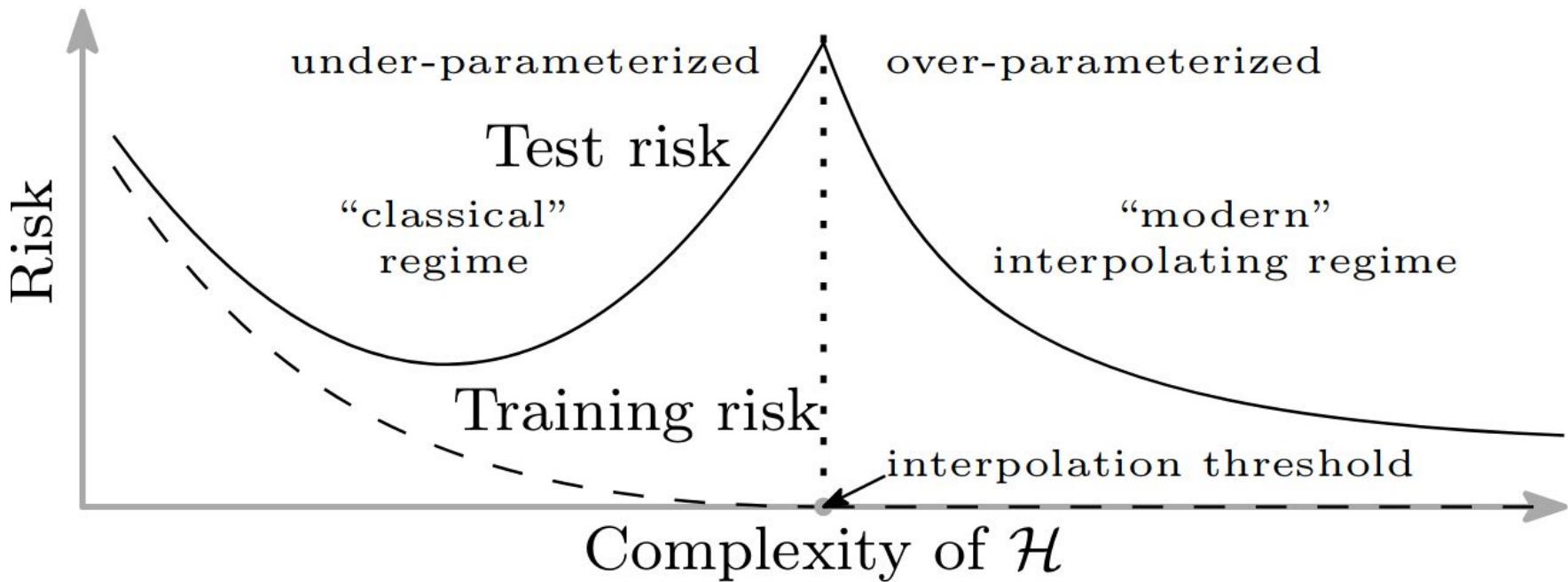


Overcomplete models and the bias/variance tradeoff

- Classical view:
 - Too simple model underfits
 - Too complex model overfits
 - Sweet spot in between
- Modern deep learning:
 - Model is “too complex”
(can learn random labels
for ImageNet)
 - Still generalizes!

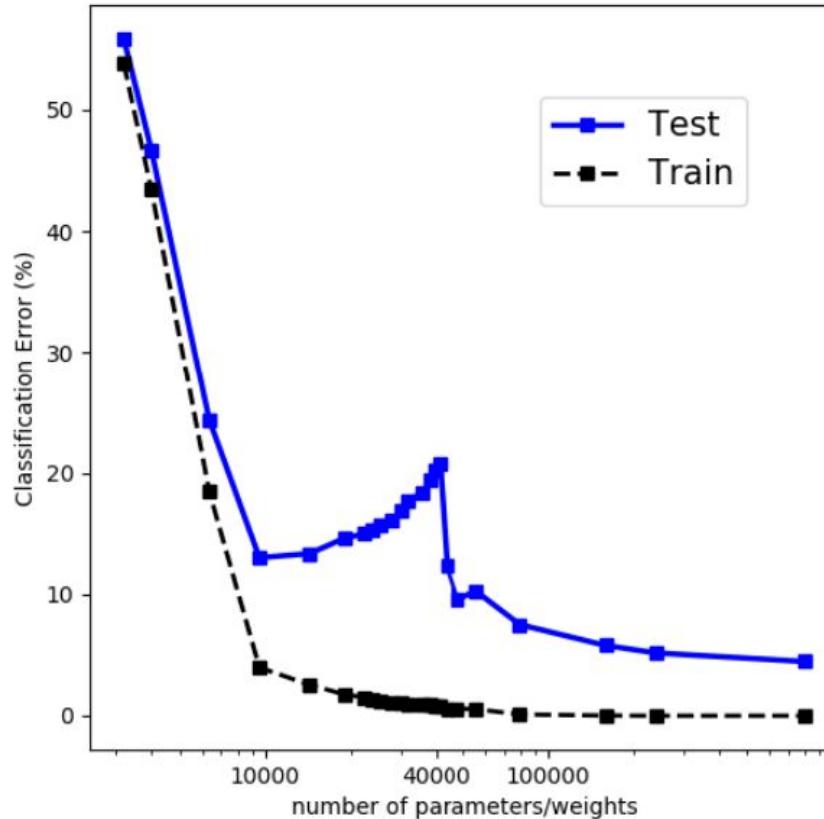


Overcomplete models and the bias/variance tradeoff



Overcomplete models and the bias/variance tradeoff

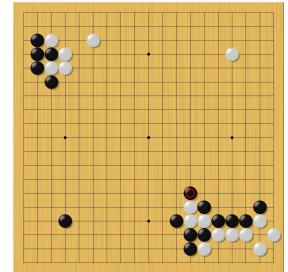
MNIST, subset of
10.000 examples,
MLP with single
hidden layer



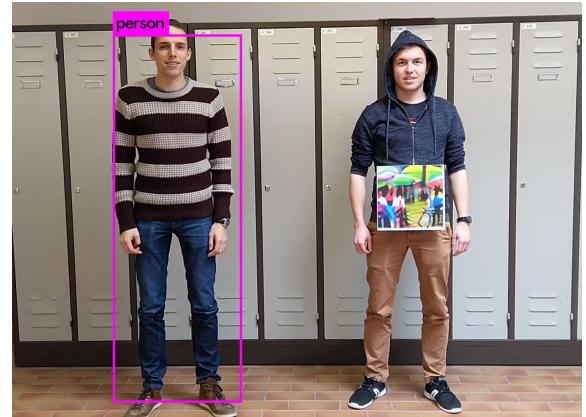
Short mentions / Teaser

ELF OpenGo: An Analysis and Open Reimplementation of AlphaZero
<https://arxiv.org/pdf/1902.04522>

2000 GPUs for self-play, 8 GPUs for training, 9 days



Fooling automated surveillance cameras:
adversarial patches to attack person detection
<https://arxiv.org/abs/1904.08653>



Improving fairness in machine learning systems:
What do industry practitioners need?
<https://arxiv.org/abs/1812.05239>

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	Automic 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

Screenshot of the vdlm/meetups GitHub repository page.

Key statistics:

- 49 commits
- 1 branch
- 0 releases
- 2 contributors

Recent activity:

- stychief update photos (20 days ago)
- Logo (25 days ago)
- Meetups (20 days ago)
- README.md (21 days ago)

Buttons at the bottom right:

- Create new file
- Upload files
- Find file
- Clone or download



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.



VDLM Youtube Channel

The screenshot shows the YouTube channel page for 'Vienna Deep Learning Meetup'. At the top, there is a video thumbnail of a meetup event with the caption 'Vienna Deep Learning Meetup'. Below the thumbnail, the channel's logo (a stylized brain icon) and name 'Vienna Deep Learning Meetup' are displayed, along with the subscriber count '198 Abonnenten'. A 'VON 198 ABONNIERT' button and a bell icon are also present. The main navigation menu includes 'ÜBERSICHT', 'VIDEOS', 'PLAYLISTS', 'KANÄLE', 'DISKUSSION', and 'KANALINFO'. The 'ÜBERSICHT' tab is currently selected. Below the menu, there is a section for 'Uploads' with three video thumbnails: 'Ethics and Bias in Artificial Intelligence - 18th Vienna' (2:54:03), 'Ethics and Bias in Artificial Intelligence - 18th Vienna' (Keine Aufrufe · vor 4 Monaten gestreamt), and '17th Vienna Deep Learning Meetup (part 2):' (54:49). To the right, there is a section titled 'BELIEBTE KANÄLE' featuring 'Kurzgesagt – In a Nut...', '7-SEKUNDEN-RÄTSEL', and 'Dinge Erklärt – Kurzge...', each with an 'ABONNIEREN' button.

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

Vienna

Deep Learning

Meetup



Next Meetup:
22nd May 2019 @ Bosch Wien

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