

Vienna Deep Learning Meetup

January 9, 2018 @ weXelerate

weXelerate

Vienna Deep Learning Meetup



The Organizers:



Thomas Lidy
Musimap



Jan Schlüter
OFAI



Alex Schindler
AIT & TU Wien

Vienna 15th Deep Learning Meetup

The logo features the text "Vienna" in a dark blue serif font, "15th Deep Learning" in a large, bold, dark blue sans-serif font, and "Meetup" in a dark blue sans-serif font. To the right of the text is a graphic of a neural network with five nodes (circles) connected by lines, rendered in dark blue.

Agenda:

- Welcome & Introduction (Tom Lidy)
- ~~Computer Vision – then and now (Alexander Schindler, AIT)~~
- Transfer Learning for fun and profit (Alexander Hirner, MoonVision)
- Deep Learning on 3D Medical Image Data at Contextflow
- Announcements (Events, Jobs)

30 minutes break

- Latest news and trends from NIPS (Rene Donner, Contextflow; Jan Schlüter, OFAI)
- Discussions and Networking

Event Announcements

Let AI experts teach you

Machine Learning Prague 2018

MARCH 23 - 25

Code 10% off - **vdlm**

mlprague.com

1 000+

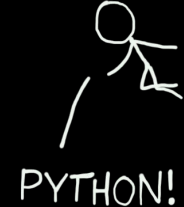
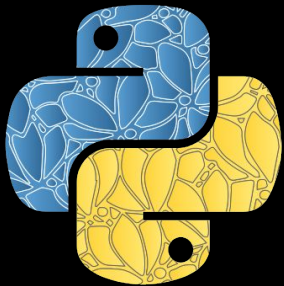
ATTENDEES

45

SPEAKERS

9

WORKSHOPS



PyDays Vienna

4 - 5 May 2018

Free Entry (Registration Required)



<https://www.pydays.at>

YOU'RE FLYING!
HOW?



- Call for Participation until 21st of March 2018
- Hosted by Linuxwochen Wien
- Location: FH Technikum Wien
(University of Applied Sciences Wien), Höchstädtplatz 6, Vienna

<https://www.xkcd.com/353/>

APPLIED ARTIFICIAL INTELLIGENCE CONFERENCE 2018

WIEN, 29.05.2018

AUSTRIA IST ÜBERALL.



GOAL OF EVENT

- Exchange on how AI is used today, in a pragmatic and applied approach. Connect developers with users and possible future users of machine learning, deep learning and neural networks for businesses

PARTICIPANTS

- C-Level (CEOs, CMO + Sales, CTO + CIOs) executives from businesses across all industry sectors from Austria and mainly neighbouring countries; 400 participants expected



SPEAKERS

- Keynote speakers from AI for business companies with a strong international POC and solutions that are relevant for businesses across a wide range of industry sectors; Willingness to host a topical workshop with selected companies on the day of the event
 - Nicolas Chapados, CSO of Element AI (tbc)
 - Thomas W. Malone, MIT Center for Collective Intelligence
 - ...

AGENDA

- Opening Keynotes
- 8 topical tracks (panel discussions)

IMAGE RECOGNITION	TEXTMINING	TIME SERIES ANALYSIS	CLUSTERING
ANOMALY DETECTION	GEODATA	CREATIVE AI	HOW TO GET STARTED

- Prearranged B2B Meetings
- In depth workshops
- Networking Lounge
- Exhibitor space

AUSTRIA IST ÜBERALL.

WKO
AUSSENWIRTSCHAFT AUSTRIA

REGISTRATION OPENS JANUARY 22, 2018

Get in touch and get involved!

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E aussenwirtschaft.technology@wko.at
W wko.at/aussenwirtschaft/aaic



Other Announcements

Data Science Hackathon - Kaggle Competition



- Modern Data Science Tools Meetup

- <https://www.meetup.com/Vienna-Modern-Data-Science/>

- Kaggle Competitions

- <https://www.kaggle.com/competitions>



- Poll

- <https://www.meetup.com/Vienna-Modern-Data-Science/polls/1260417>

- Contact

- bpirvu@novomatic.com



LEHNER EXECUTIVE PARTNERS

Vienna Munich Frankfurt Moscow

Member of the Cornerstone International Group

Bernhard Reiser

We are one of the Top 5, internationally certified executive search companies with focus on ASG and CEE

Who we are

- One of the only top 5 executive search companies in Austria certified by AESC, the Association of Executive Search and Leadership Consultants
- Since 1996 prestigiously established on the Austrian market
- Focus on ASG and CEE
- 90% of our clients are regular customers, 95% of all searched positions successfully filled
- We offer international presence: with our 4 own offices as well as a member of the Cornerstone International Group with 70 offices in 55 countries we serve our clients all around the world

We are market leaders and focus in three primary areas

Our focus is on innovative and dynamic industries and technologies

1. Technology
(incl. AI, Robotics, Machine Learning, etc.)

2. Advisory and Consulting

3. M&A and team moves

- By our clear focus we have outstanding access to the market
- We have deep rooted sector know-how and keep ourselves state of the art on the market developments both on the client and candidate side
- We maintain ongoing contact to assure we are always up to date with every change

What we can offer

Currently one of our clients (a top brand in consultancy) is building up an AI-Team in Vienna. Therefore we look for

1. AI Experts

- You are already working in an AI environment and want to be part of a blowing business unit within a top firm?

2. AI Team leaders

- You are a team leader in the AI area, you bring a good sales approach and you like to build up business from scratch?

3. Company

- You own a company specialized on AI and want to drive business to the next level through the benefit of a market leader with an extensive network?

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* break *

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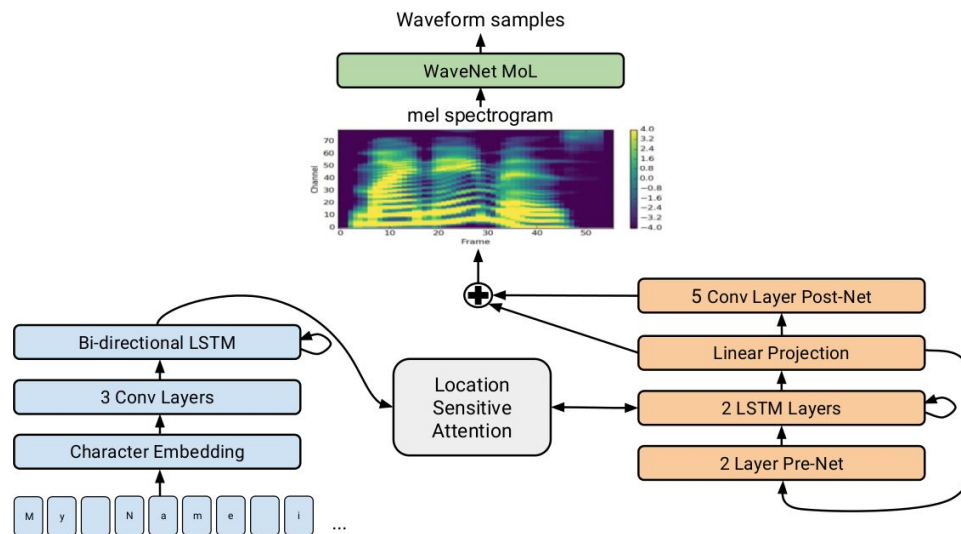
Hot Topics & Latest News

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

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

Tacotron 2

- Text-to-speech directly from characters, learned end-to-end
- Improvement over Tacotron: mel spectrogram + WaveNet instead of linear spectrogram + Griffin-Lim
- Improvement over some earlier WaveNet-based systems: no need to explicitly predict phones, timing and f0
- Comparison to Deep Voice 3: higher MOS, more mispronunciations, fewer repetitions or skipped words

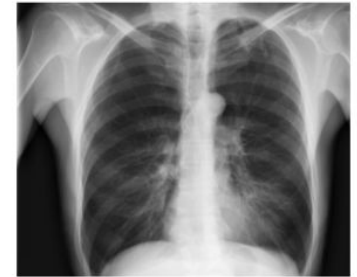


Name	MOS
Parametric	3.492 ± 0.096
Tacotron (Griffin-Lim)	4.001 ± 0.087
Concatenative	4.166 ± 0.091
WaveNet (Linguistic)	4.341 ± 0.051
Ground Truth	4.582 ± 0.053
Tacotron 2 (this paper)	4.526 ± 0.066

CheXNet: Radiologist-Level Pneumonia Detection on Chest X-Rays with Deep Learning

- “We develop an algorithm that can detect pneumonia from chest X-rays at a level exceeding practicing radiologists.”

	F1 Score (95% CI)
Radiologist 1	0.383 (0.309, 0.453)
Radiologist 2	0.356 (0.282, 0.428)
Radiologist 3	0.365 (0.291, 0.435)
Radiologist 4	0.442 (0.390, 0.492)
Radiologist Avg.	0.387 (0.330, 0.442)
CheXNet	0.435 (0.387, 0.481)



Input
Chest X-Ray Image

CheXNet
121-layer CNN

Output
Pneumonia Positive (85%)



CheXNet: Radiologist-Level Pneumonia Detection on Chest X-Rays with Deep Learning

- “We extend CheXNet to detect all 14 diseases in ChestXray14 and achieve state of the art results on all 14 diseases.”

Pathology	Wang et al. (2017)	Yao et al. (2017)	CheXNet (ours)
Atelectasis	0.716	0.772	0.8094
Cardiomegaly	0.807	0.904	0.9248
Effusion	0.784	0.859	0.8638
Infiltration	0.609	0.695	0.7345
Mass	0.706	0.792	0.8676
Nodule	0.671	0.717	0.7802
Pneumonia	0.633	0.713	0.7680
Pneumothorax	0.806	0.841	0.8887
Consolidation	0.708	0.788	0.7901
Edema	0.835	0.882	0.8878
Emphysema	0.815	0.829	0.9371
Fibrosis	0.769	0.767	0.8047
Pleural Thickening	0.708	0.765	0.8062
Hernia	0.767	0.914	0.9164

- <https://lukeoakdenrayner.wordpress.com/2017/12/18/the-chestxray14-dataset-problems/>: labels were mined from medical reports, not by looking at images; some labels are systematically wrong; categories are not medically meaningful



Input
Chest X-Ray Image

CheXNet
121-layer CNN

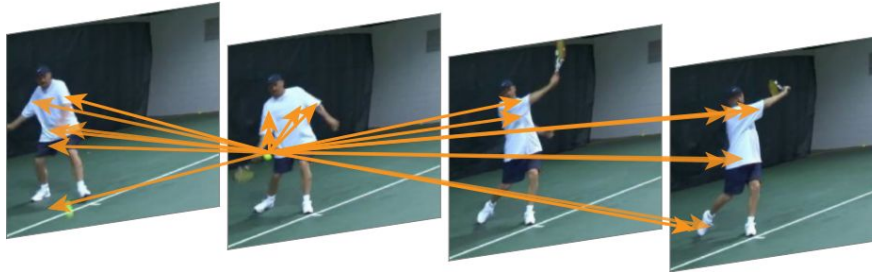
Output
Pneumonia Positive (85%)



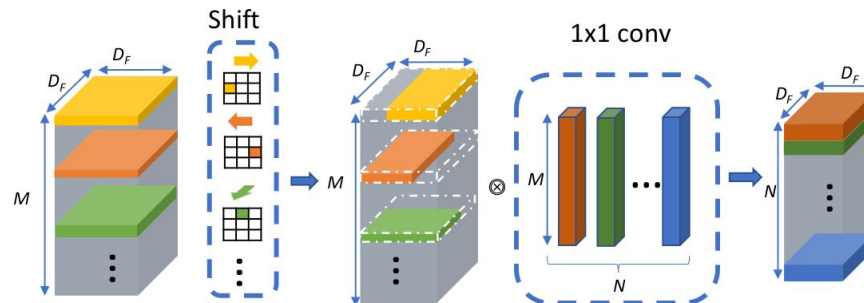
<http://arxiv.org/abs/1711.05225>

Network architecture innovations

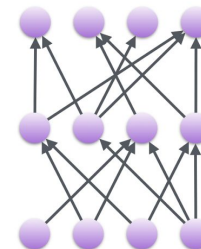
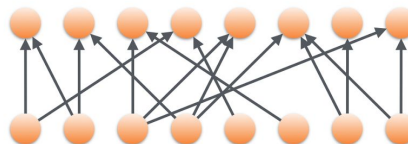
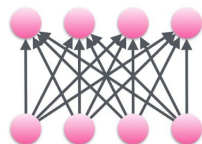
- “Non-local Neural Networks” <https://arxiv.org/abs/1711.07971>
A generalization of self-attention for feed-forward networks



- “Shift: A Zero FLOP, Zero Parameter Alternative to Spatial Convolutions”
<https://arxiv.org/abs/1711.08141>

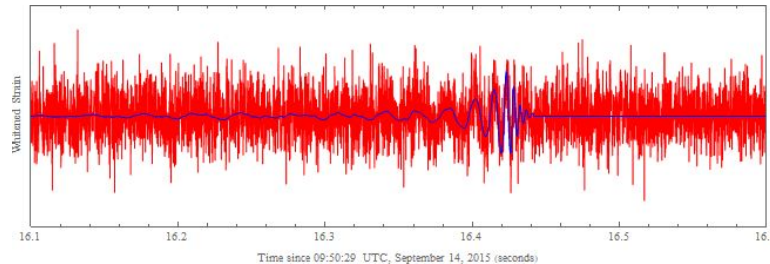


- “Block-Sparse GPU Kernels”
<https://blog.openai.com/block-sparse-gpu-kernels/>

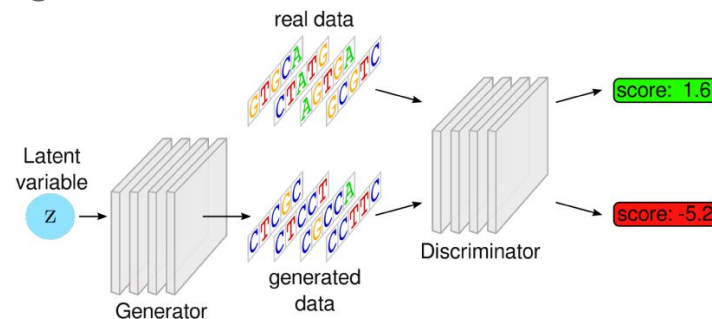


Other interesting applications

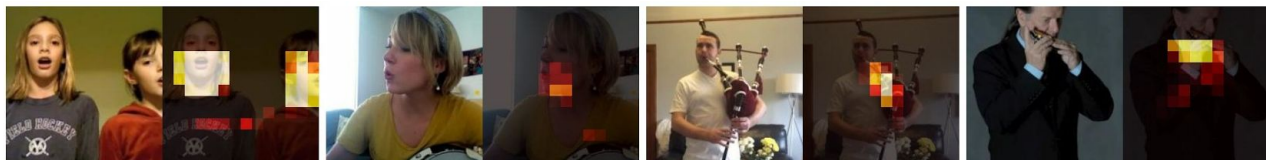
- “Deep Learning for Real-time Gravitational Wave Detection and Parameter Estimation with LIGO Data” <https://arxiv.org/abs/1711.07966>



- “Generating and designing DNA with deep generative models” <https://arxiv.org/abs/1712.06148>



- “Objects that Sound” <https://arxiv.org/abs/1712.06148>



Tons more

arxiv-sanity.com

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Top papers based on people's libraries:

Deep Learning: A Critical Appraisal
Gary Marcus
1/2/2018 cs.AI | 97R40 | 1.2.0; 1.2.6
1 figure
[show similar](#) [discuss](#)

1801.00631v1

Although deep learning has historical roots going back decades, neither the term "deep learning" nor the approach was popular just over five years ago, when the field was reignited by papers such as Krizhevsky, Sutskever and Hinton's now classic (2012) deep network model of ImageNet. What has the field discovered in the five subsequent years? Against a background of considerable progress in areas such as speech recognition, image recognition, and game playing, and considerable enthusiasm in the popular press, I present ten concerns for deep learning, and suggest that deep learning must be supplemented by other techniques if we are to reach artificial general intelligence.

DeepMind Control Suite
Yuval Tassa, Yotam Doron, Alistair Muldal, Tom Erez, Yaze Li, Diego de Las Casas, David Budden, Abbas Abdolmaleki, Josh Merel, Andrew Lefrancq, Timothy Lillicrap, Martin Riedmiller
1/2/2018 cs.AI
24 pages, 7 figures, 2 tables
[show similar](#) [discuss](#)

1801.00690v1

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Hot Tweets

@OriolVinyalsML
"Optimal" running, brought to you by Deep RL. <https://t.co/NimTGxSDbu>
<https://t.co/5ln3HO680t>
2018-01-03 [Retweet](#) [Like](#) [Super Hot](#)

@ilyasut
The ML wish of 2018: may all your local minima be global, your variance bounded, your labelled data plentiful, and your compute massive!
2017-12-31 [Retweet](#) [Like](#) [Super Hot](#)

@AndrewWNg
Question for everyone: Can you name a 2017 AI accomplishment (such a technical result, prototype, demo, research pa...
<https://t.co/qM5HtKbmmh>
2017-12-28 [Retweet](#) [Like](#) [Super Hot](#)

@fchollet
The ML research community has long been driven by the need to publish, which results in a stark, sometimes ridiculo...
<https://t.co/5H4K5UJL>
2018-01-04 [Retweet](#) [Like](#) [Super Hot](#)

@ylecun
This is to AI as prestidigitation is to real magic. Perhaps we should call this "Cargo Cult AI" or "Potemkin AI" o... <https://t.co/ZASi02AMNV>
2018-01-04 [Retweet](#) [Like](#) [Super Hot](#)

@fchollet

Hot Papers

DeepMind Control Suite
Yuval Tassa, Yotam Doron, Alistair Muldal, Tom Erez, Yaze Li, Diego de Las Casas, David Budden, Abbas Abdolmaleki, Josh Merel, Andrew Lefrancq, Timothy Lillicrap, Martin Riedmiller
2018-01-02 [PDF](#) [Mendeley](#) [Super Hot](#)

Adversarial Patch
Tom B. Brown, Dandelion Mandé, Aurko Roy, Martin Abadi, Justin Gilmer
2017-12-27 [PDF](#) [Mendeley](#) [Super Hot](#)

Deep Learning: A Critical Appraisal
Gary Marcus
2018-01-02 [PDF](#) [Mendeley](#) [Super Hot](#)

Recent Advances in Recurrent Neural Networks
Hojjat Salehinejad, Julianne Baarbe, Sharan Sankar, Joseph Barfett, Errol Colak, Shahrokh Valaei
2017-12-29 [PDF](#) [Mendeley](#) [Super Hot](#)

Visualizing the Loss Landscape of Neural Nets
Hao Li, Zheng Xu, Gavin Taylor, Tom Goldstein
2017-12-28 [PDF](#) [Mendeley](#) [Super Hot](#)

CNN is All You Need
Qiming Chen, Ren Wu
2017-12-27 [PDF](#) [Mendeley](#) [Super Hot](#)

Deep learning for universal linear embeddings of nonlinear dynamics
Bethany Lorch, J. Nathan Kutz, Steven L

Fresh Papers

Characterizing Adversarial Subspaces Using Local Intrinsic Dimensionality
Xingjun Ma, Bo Li, Yisen Wang, Sarah M. Erfani, Sudanthi Wijewickrema, Michael E. Houle, Grant Schoenbeck, Dawn Song, James Bailey
2018-01-08 [PDF](#) [Mendeley](#) [Hot](#)

Spatially transformed adversarial examples
Chaowei Xiao, Jun-Yan Zhu, Bo Li, Warren He, Mingyan Liu, Dawn Song
2018-01-08 [PDF](#) [Mendeley](#) [Hot](#)

Generating adversarial examples with adversarial networks
Chaowei Xiao, Bo Li, Jun-Yan Zhu, Warren He, Mingyan Liu, Dawn Song
2018-01-08 [PDF](#) [Mendeley](#) [Hot](#)

LaVAN: Localized and Visible Adversarial Noise
Danny Karmon, Daniel Zoran, Yoav Goldberg
2018-01-08 [PDF](#) [Mendeley](#)

Unsupervised Discovery of Toxoplasma gondii Motility Phenotypes
Mojtaba S. Fazli, Stephen A. Vella, Silvia N. J. Moreno, Shannon Quinn
2018-01-08 [PDF](#) [Mendeley](#)

Analyzing Roles of Classifiers and Code-Mixed factors for Sentiment Identification

Sepp Hochreiter

Audi.JKU deep learning center, JKU Linz

Einsatz künstlicher Intelligenz im Automobil

30.01.2018 um 16:00 Uhr



WeXelerate HQ, main event room (Space 28, 2. Stock)

Anmeldung: office@blueminds-company.com

Next

Vienna Deep Learning Meetup

The logo for the Vienna Deep Learning Meetup features a stylized neural network diagram. It consists of a series of dark blue circles of varying sizes connected by a dark blue line. The circles are arranged in a roughly circular path, with one circle being significantly larger than the others, positioned on the right side of the path.

mid February 2018

Discussion Panel:
“Ethics and Bias in A.I.”

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