8th Vienna
Deep Learning Meetup

Jan 17, 2017 @ TU Wien

Thomas Lidy   Jan Schlüter   Alex Schindler

8th Vienna Deep Learning Meetup

Agenda:

- Welcome

- Hot Topics and Latest News (Tom Lidy & Jan Schlüter)

- Coding Session with Keras:
  Deep Learning Library for Python (Tom Lidy, Alex Schindler)

- Questions & Answers

- Discussion

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Latest News
Hot Topics

a 5-10 min block at every meetup to briefly present "trending topics"

Send us contributions (tom.lidy@gmail.com)
or come with slides to do a 5-10 min block yourself!

Apple starting to publish AI research?

Deep Learning

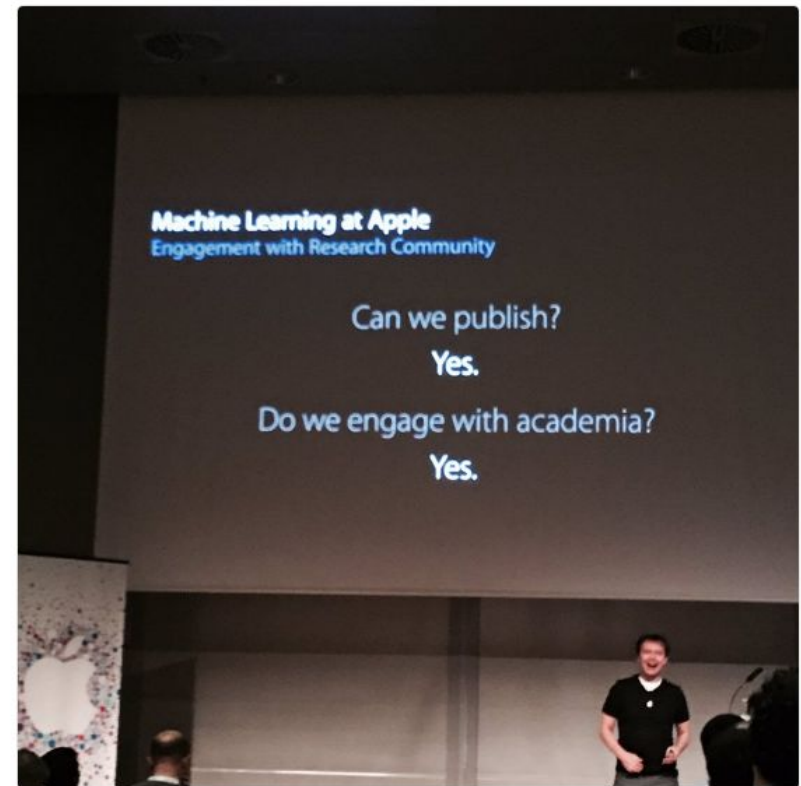"The company will begin sharing its research into artificial intelligence in a move that may help advance its efforts."

https://www.cnet.com/news/apple-is-going-start-publishing-its-research-into-ai/

hardmaru
@hardmaru

Folgen

Apple will start publishing, according to @rsalakhu at #nips2016

Machine Learning at Apple
Engagement with Research Community

Can we publish?
Yes.
Do we engage with academia?
Yes.

RETWEETS 234   GEFÄLLT 401

06:07 - 6. Dez. 2016 aus Barcelona, Spanien

TensorFlow now supports Windows

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before, it was only possible using Docker or VMs
- not a good way for TensorFlow to access a GPU

TensorFlow 0.12 adds native support for Windows:
https://developers.googleblog.com/2016/11/tensorflow-0-12-adds-support-for-windows.html

Beware: TensorFlow supports **only 64-bit Python 3.5** on Windows

Guide: How to install TensorFlow on Windows without Docker / VMs:

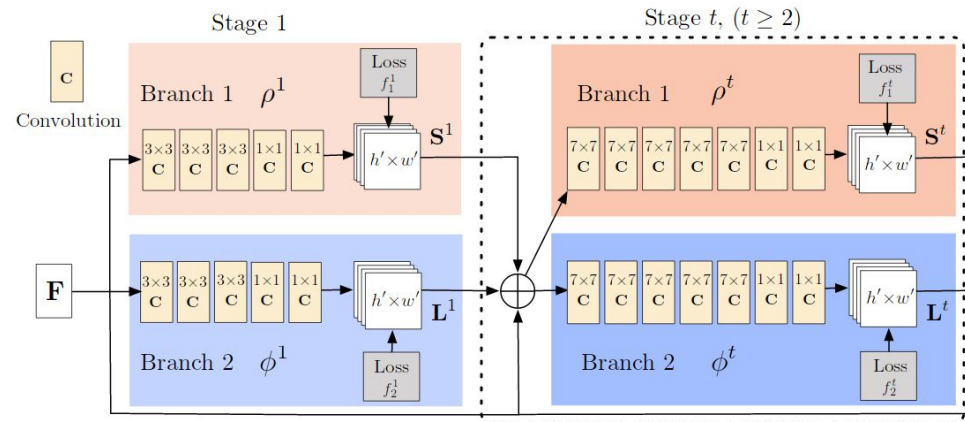http://www.netinstructions.com/how-to-install-tensorflow-on-windows-without-docker-or-virtual-machines/

Thanks to by Dalibor Mitrovic for recommending this news contribution!

Realtime Multi-Person Pose Estimation

Deep Learning

two-branch multi-stage CNN:

https://www.youtube.com/watch?v=pW6nZXeWlGM&t=77s
https://arxiv.org/abs/1611.08050
Code link under the video

Recommended by Alex Schindler

Google open-sources DeepMind Lab

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DeepMind Lab platform was used for AI to learn how to play computer games, navigate through mazes, etc.

One of the goals:
"Design intelligent agents capable of more-and-more sophisticated cognitive skills"

Now available to broader research community, as an opportunity to make further significant contributions.

Fully 3D game-like platform tailored for agent-based AI research, to learn: navigation, memory, 3D vision from a first person viewpoint, motor control, planning, strategy, time, etc.

https://deepmind.com/blog/open-sourcing-deepmind-lab/
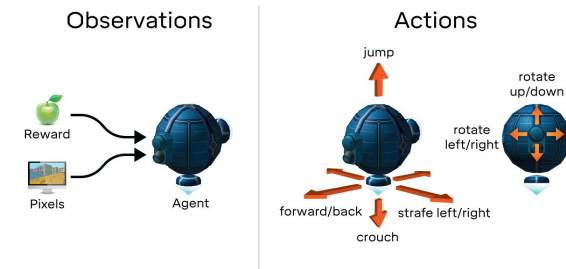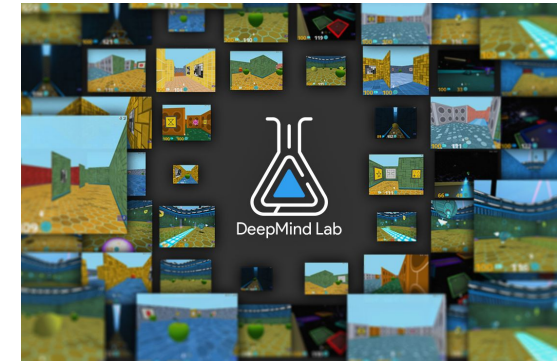
OpenAI releases "Universe"

Universe: a software platform for measuring and training an AI's general intelligence for of games, websites and other applications.

allows an AI agent to **use a computer like a human**: looking at screen pixels and operating a virtual keyboard and mouse (through VNC)

"In April, we launched Gym, a toolkit for developing and comparing reinforcement learning algorithms. With Universe, any program can be turned into a Gym environment."

"We must train AI systems on the full range of tasks we expect them to solve, and Universe lets us train a single agent on any task a human can complete with a computer."

Universe includes 2600 Atari games, 1,000 Flash games, browser tasks and more
https://openai.com/blog/universe/

Uber launches AI lab

Uber acquired AI start-up Geometric Intelligence with 15 ML researchers and launched an AI lab in San Francisco

"as it seeks to use the technology to improve its driverless cars and delivery routes"

(first "self-driving" Uber cars now in SF, but with a "person monitoring the car")

https://www.ft.com/content/7ad79536-bb0c-11e6-8b45-b8b81dd5d080
https://newsroom.uber.com/ailabs/

Practical Deep Learning For Coders

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7 week course: http://course.fast.ai
- SGD, CNNs, RNNs
- Over-/underfitting
- Cats&Dogs, NLP, Embeddings
- Keras functional API
- ...

Thanks to by Dalibor Mitrovic for recommending this news contribution!

Gradient-based Hyperparameter Optimization through Reversible Learning

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- Backpropagate through backpropagation to adjust hyperparameters (learning rate, momentum, …)
- Optimize performance on validation set
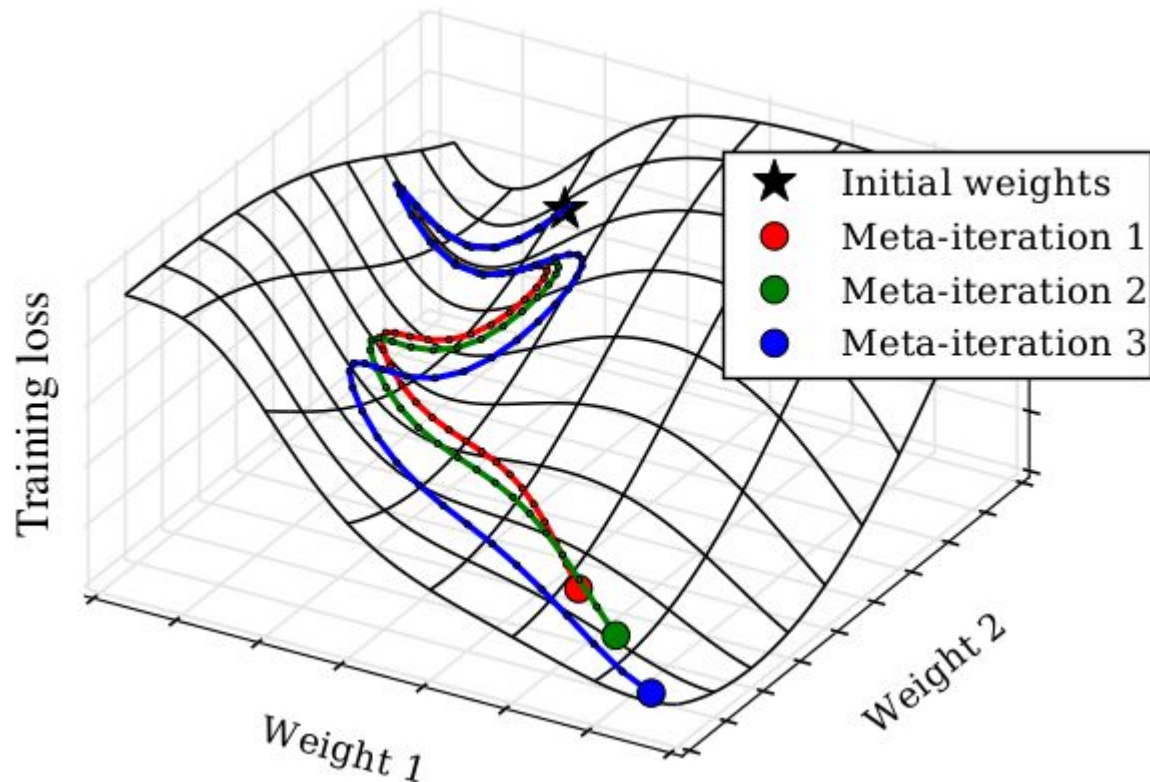
Adaptive Computation Time for Recurrent Neural Networks

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- Standard RNN: Compute one output per input
- Amount of computation controlled by network depth, the same for each input
- ACT: RNN can decide how long to cycle before producing the output
- Penalized for taking too long

Coding Session
http://bit.ly/deeplearntut

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Coding Session with **Keras** Deep Learning Library for Python

1. Car Recognition on Images
   - Full vs. Convolutional Network
   - ReLU Activation
   - Dropout
   - Data Augmentation
2. Music vs. Speech Classification
   - Preprocessing of Audio files
   - Train/Test set split
   - single, stacked and parallel CNNs
   - RNN
3. Hard-Disk Failure Prediction with SMART data
   - RNN   *(postponed to next meetup)*

Call for Meetup Topics / Talks
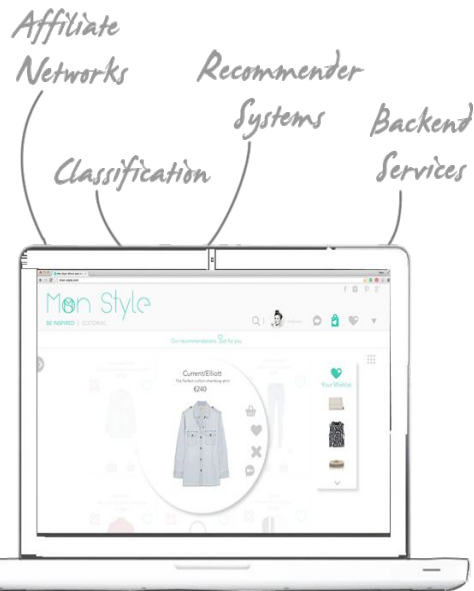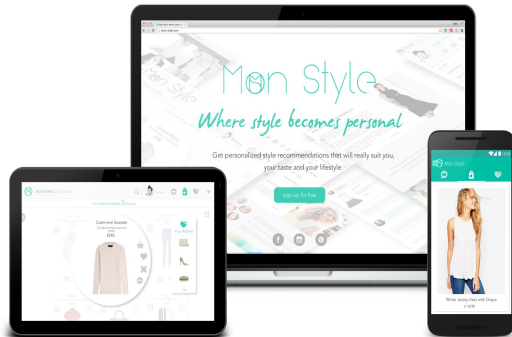
NEXT MEETUP: February 21, 2017 @ bwin

Looking for:
- Industry Applications of DL
- Real World Use Cases of DL
- Interesting novel scientific results
- Fun applications
- Niche applications

- Latest News / Hot topics

Get in touch if you want to contribute something!
tom.lidy@gmail.com

Job Offer in DL Startup

Mon Style is a tech startup that uses **machine-learning** to deliver highly **accurate results to online shoppers**.
Their mission is to revolutionize the way we discover, interact and shop products.

Job Profile:

- Full time position based in Vienna
- Flexible working hours and home office
- Knowledge of algorithms and data structures, Python
- Knowledge of machine learning (Classification, Regression and Clustering)
- Experience using deep learning frameworks like Caffe/Torch/Theano/TensorFlow + numpy, pandas etc.

Application: office@mon-style.com

Data Science und Deep Learning
Innovationslehrgang

Lehrgang (~Master class) mit 4 Modulen:

1. Data Science Basics
2. Advanced Data Science
3. Deep Learning
4. Word Embedding – Deep Learning für Text
5. Grundlagen der Teilnahme in einem Datenmarkt

durchgeführt von on TU Wien, Donau-Universität Krems und Research Studios Austria

Für Firmen:

- Beitrag zur (wirtschaftsorientierten) Ausrichtung des Lehrgangs
- **Geförderte Teilnahme am Lehrgang**
- Möglichkeit für kleine Projekte mit den Forschungspartnern
- Förderung für Teilnahme: K/M/G Unternehmen: **70**/60/50 %

Nur Firmenpartner, die Teil des Projektantrags sind, dürfen am Lehrgang teilnehmen! - Get in touch with Tom!

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Thanks you for coming!