

Vienna



Deep Learning

Meetup

27 February 2018 @ A1 Telekom Austria



Vienna Deep Learning Meetup

The Organizers:



Thomas Lidy
Musimap



Jan Schlüter
OFAI



Alex Schindler
AIT & TU Wien



Vienna 16th Deep Learning Meetup

Agenda:

- Welcome & Introduction (The Organizers)
- Demystifying Neural Word Embedding: Applications in Financial Sentiment Analysis and Gender Bias Detection (**Navid Rekabsaz**, TU Wien & Idiap Research Institute, EPFL)
- Announcements
 - *30 minutes break*
- Review of Andrew Ng's Deep Learning Specialization on Coursera (**Christoph Bonitz**, Automic Software GmbH)
- Latest News & Hot Topics
- Networking and Discussions

New Youtube Channel

The screenshot shows the YouTube channel page for 'Vienna Deep Learning Meetup'. At the top, there's a search bar with 'Suchen' and a magnifying glass icon. To the right are icons for upload, grid, and notifications. The main video thumbnail shows a group of people at a meet-up. A small overlay in the bottom right corner of the thumbnail reads 'Vienna Deep Learning Meetup'. Below the thumbnail, the channel name 'Vienna Deep Learning Meetup' is displayed in large text, followed by '52 Abonnenten'. There are two blue buttons: 'KANAL ANPASSEN' and 'CREATOR STUDIO'. Below these are navigation links: 'ÜBERSICHT' (underlined), 'VIDEOS', 'PLAYLISTS', 'KANÄLE', 'DISKUSSION', and 'KANALINFO'. A search icon and a 'next' arrow are also present. A message 'Auf diesem Kanal gibt es keine Inhalte' is centered below the navigation links. On the right, a section titled 'ANGESAGTE KANÄLE' is visible.

SUBSCRIBE:

<https://www.youtube.com/channel/UCAVBJhzHK-jleJbyYTDp8cA>

BELIEBTE KANÄLE AUF
YOUTUBE

Event Announcements

Winner of Conference Tickets:
Clifford Bednar

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



Machine Learning Prague 2018

MARCH 23 - 25

Code 10% off - **vdlm**

mlprague.com

1 000+

ATTENDEES

45

SPEAKERS

9

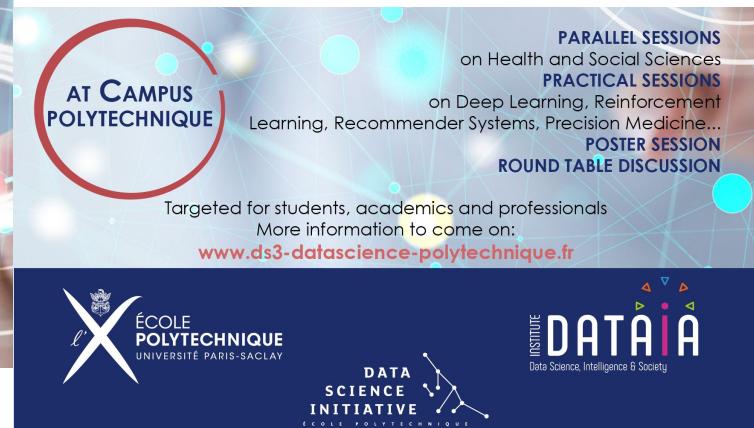
WORKSHOPS

WORKSHOP March 23:

Deep Learning for Music Classification using Keras

Alexander Schindler, AIT & TU Wien

Thomas Lidy, Musimap



Transylvanian Machine Learning Summer School

16-22 July 2018, Cluj-Napoca, Romania

Deadline for applications: 30 March 2018, 23:59 EET



Lecturers

Doina Precup (McGill Univ, DeepMind)
Dumitru Erhan (Google Brain)
Guido Montufar (UCLA)
Jan Chorowski (Wroclaw Univ)
Kyunghyun Cho (NYU, FAIR)
Lucian Busoniu (TechUniv Cluj)
Luigi Malago (RIST)
Marius Leordeanu (PoliUniv Bucharest)
Raia Hadsell (DeepMind)
Razvan Pascanu (DeepMind)

Lab sessions

Diana Borsa
Mihaela Rosca
Viorica Patraucean
Wojtek Czarnechi

Partners



Organizers

Doina Precup
Luigi Malago
Razvan Florian
Razvan Pascanu
Viorica Patraucean

Contact

contact@tmlss.ro
www.tmlss.ro

Sponsors



Job Announcements

Applied

COMPUTER VISION

@ JUMIO

// what, for who, how, news

BY RADU ROGOJANU, VIENNA @JUMIO, 27.02.2018

// what

TRUSTED IDENTITY AS A SERVICE

Increasing number of businesses ask themselves:

Do we **really** know **who** our online customer is?

Eg: **who** is **mr.ford.1995@gmail.com** ?

// what

TRUSTED IDENTITY AS A SERVICE

Jumio verifies your online customer



Identity Card

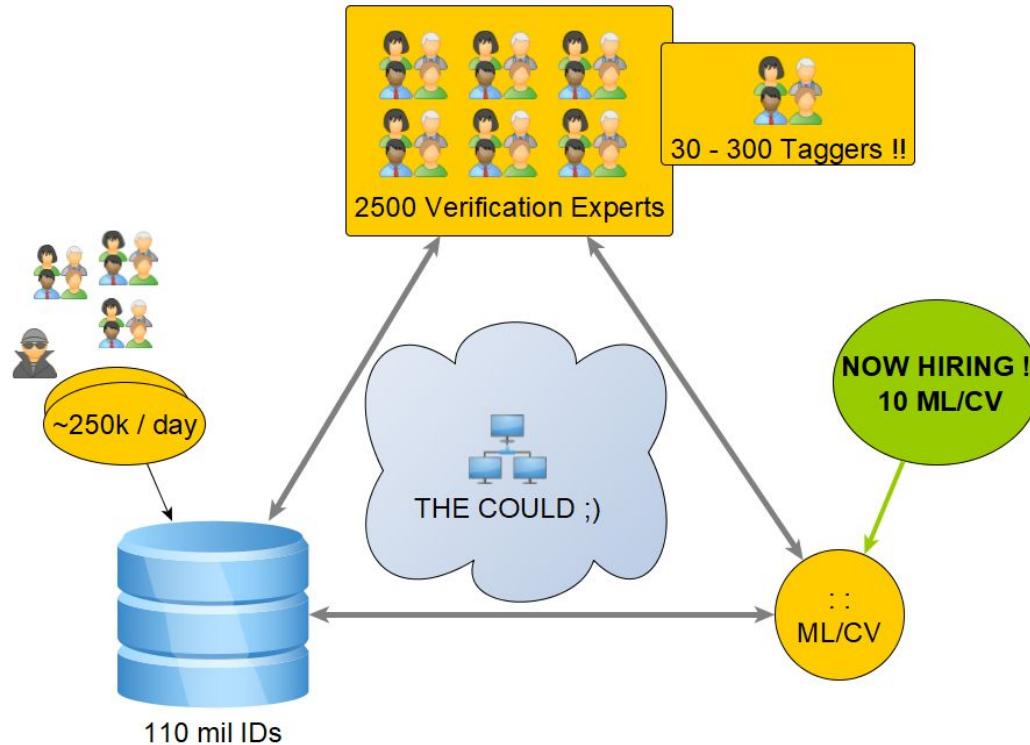


Selfie

*image courtesy of mr.ford.1995@gmail.com

// how

INFRA + DATA + VERIFICATION EXPERTS + ML TEAM

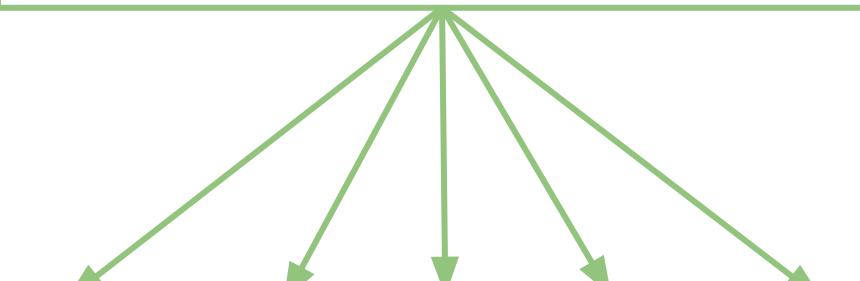
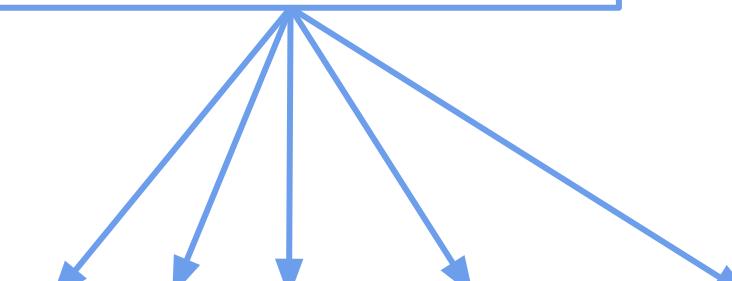


HUMAN + AI = AUGMENTED INTELLIGENCE

WE'RE HIRING: [HTTPS://WWW.JUMIO.COM/CAREERS/](https://www.jumio.com/careers/)

**5 new positions:
ML/CV Researcher**

**5 new positions:
ML/CV Applied Researcher**



Theoretical

Practical



Your partner for 3D sensing applications
www.emotion3d.tv

Automotive, Robotics



In-cabin analysis

- Gesture control
- Attention monitoring
- Comfort features
- Safety functionalities



Front & rear view

- 3D obstacle detection
- Traffic sign recognition
- High beam assistance
- Vehicle & lane detection



Surround view

- 3D obstacle detection
- Ego motion
- Parking assistance
- Calibration

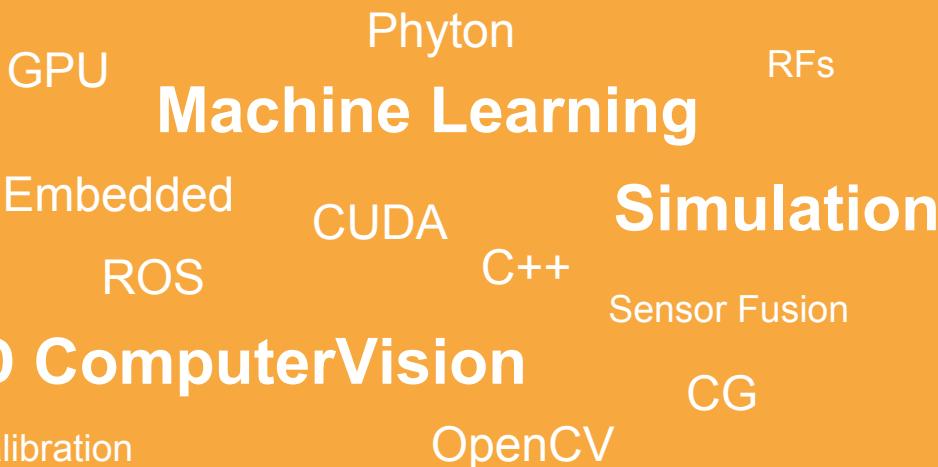


Looking for a new challenge?



Open Positions

- Software Developer: Computer Vision
- Data Scientist: Machine Learning
- Embedded Software Engineer: Automotive





www.emotion3d.tv

Florian Seitner (fse@emotion3d.tv)



Vienna 16th Deep Learning Meetup

Agenda:

- Welcome & Introduction (The Organizers)
- Demystifying Neural Word Embedding: Applications in Financial Sentiment Analysis, and Gender Bias Detection (**Navid Rekabsaz**, TU Wien & Idiap Research Institute, EPFL)
- Announcements
 - *30 minutes break*
- Review of Andrew Ng's Deep Learning Specialization on Coursera (**Christoph Bonitz**, Automic Software GmbH)
- Latest News & Hot Topics
- Networking and Discussions

Hot Topics & Latest News

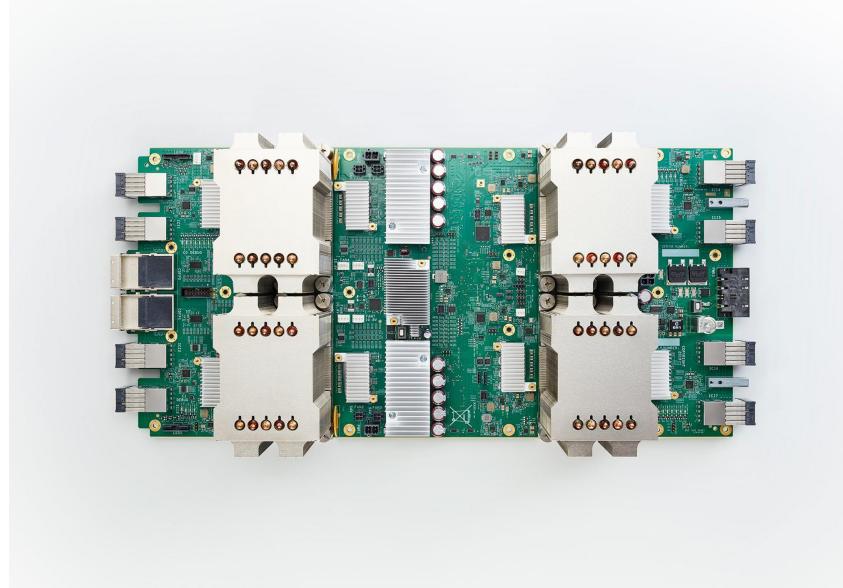
a short block at every meetup
to briefly present recent papers and news

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

Google gives access to TPUs

... through
Google Cloud
(\$6.50/h per TPU)

1 TPU:
64 GB VRAM
180 teraflops peak
performance



“available in limited quantities”

developers have to request a Cloud TPU quota and describe what they want to do with the service

<https://techcrunch.com/2018/02/12/googles-custom-tpu-machine-learning-accelerators-are-now-available-in-beta>

<https://mobile.nytimes.com/2018/02/12/technology/google-artificial-intelligence-chips.html>

<https://cloudplatform.googleblog.com/2018/02/Cloud-TPU-machine-learning-accelerators-now-available-in-beta.html>

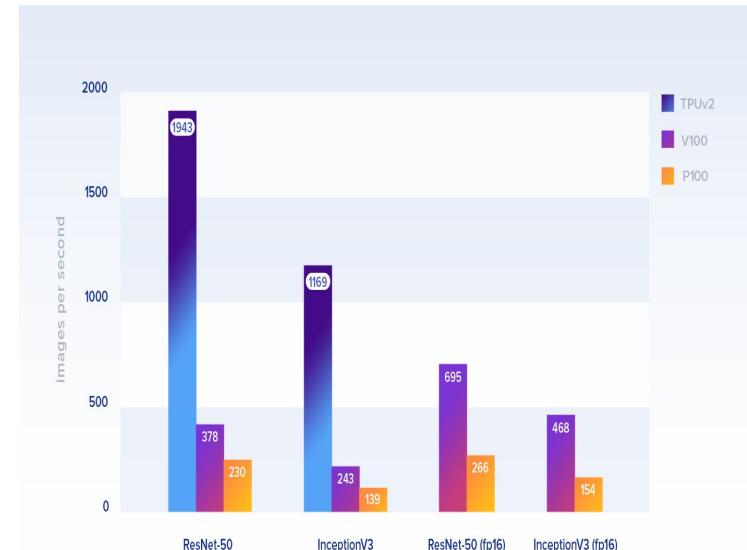
TPU Benchmark

ResNet-50: TPUv2 (8 cores and 64GB of RAM) is
~8.4 faster than an Nvidia P100 and ~5.1 times
faster than an Nvidia V100

[Batch sizes were 1024 for TPU and 128 for GPUs;
TPU still 5.6 times / 3.4 times faster with unique batch size of 128]

InceptionV3: the speedup is almost the same
(**~8.4** and **~4.8 faster**, respectively)

Small LSTM model : **~12.9 times faster** than a
P100 and ~7.7 times faster than a V100



<https://blog.riseml.com/benchmarking-googles-new-tpuv2-121c03b71384>

Amazon building AI chip

After Google and Apple, also Amazon design its own AI chips

“That strategy has major ramifications for chip companies like Intel and Nvidia, which are now competing with companies that previously have been their customers.”

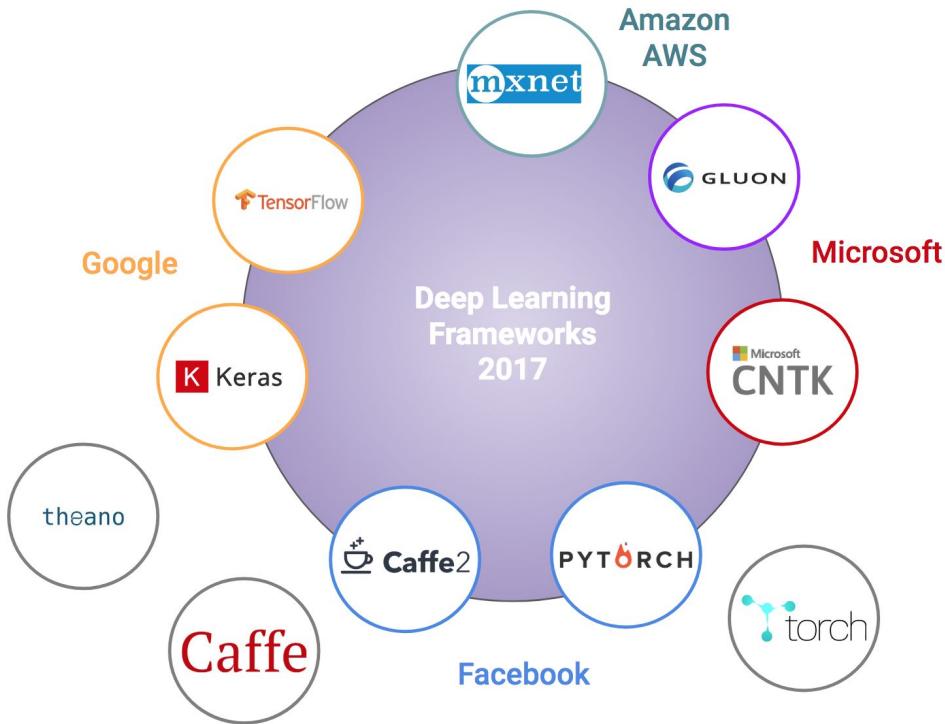
Amazon is developing its own AI chip designed to work on the Echo and other hardware



<https://www.hpcwire.com/2018/02/12/ai-cloud-competition-heats-googles-tpus-amazon-building-ai-chip>

<https://www.theinformation.com/articles/amazon-is-becoming-an-ai-chip-maker-speeding-alexa-responses>

Battle of the Deep Learning frameworks



Open Neural Network Exchange (ONNX)



ONNX

Linux	Windows
build passing	build passing

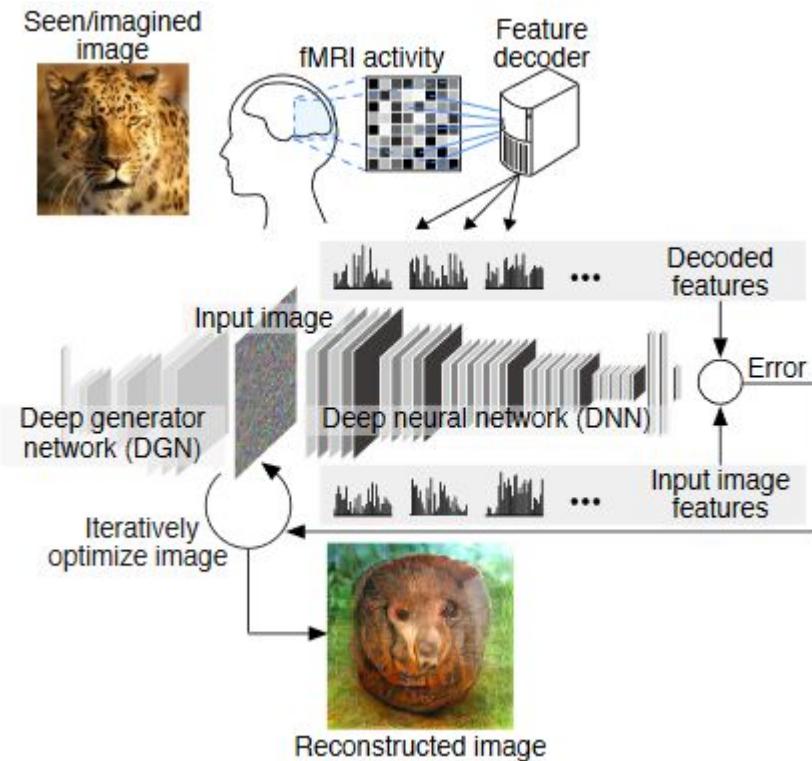
Open Neural Network Exchange (ONNX) is the first step toward an open ecosystem that empowers AI developers to choose the right tools as their project evolves. ONNX provides an open source format for AI models. It defines an extensible computation graph model, as well as definitions of built-in operators and standard data types. Initially we focus on the capabilities needed for inferencing (evaluation).

Caffe2, PyTorch, Microsoft Cognitive Toolkit, Apache MXNet and other tools are developing ONNX support. Enabling interoperability between different frameworks and streamlining the path from research to production will increase the speed of innovation in the AI community. We are an early stage and we invite the community to submit feedback and help us further evolve ONNX.

<https://github.com/onnx/onnx>

AI algorithm reading your mind

- generates images from brain activity
- starts from a random image and iteratively optimize the pixel values so that the DNN features of the input image become similar to those decoded from brain activity across multiple DNN layers
- reconstruction from the brain activity
- by ATR Computational Neuroscience Laboratories and Kyoto University in Japan



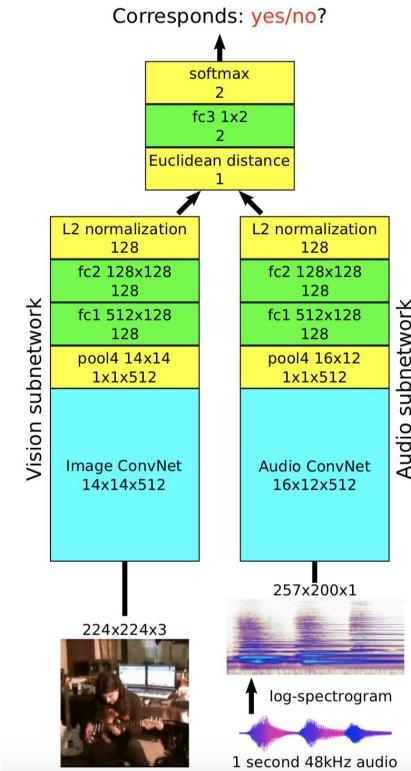
<https://news.developer.nvidia.com/ai-algorithm-can-read-your-mind>

Objects that Sound



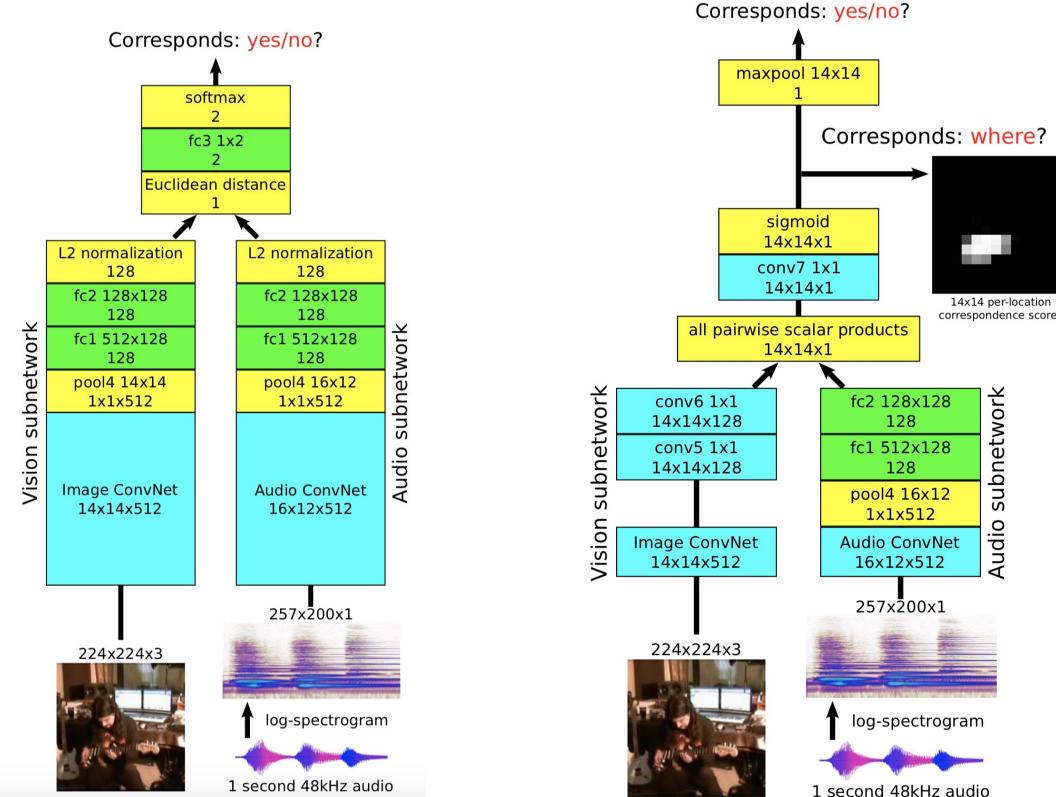
<https://arxiv.org/abs/1712.06651>

Objects that Sound



<https://arxiv.org/abs/1712.06651>

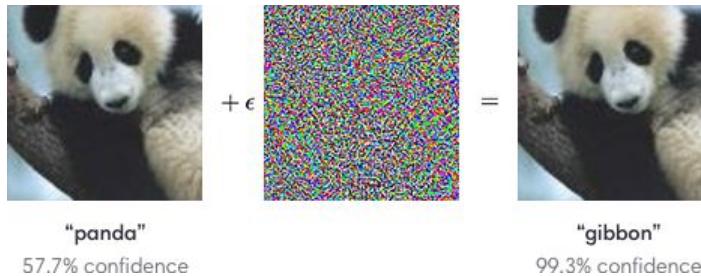
Objects that Sound



<https://arxiv.org/abs/1712.06651>

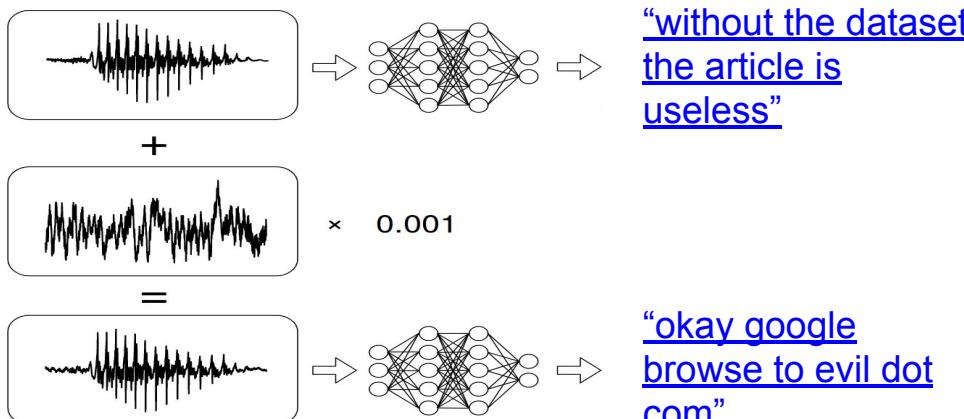
Audio Adversarial Examples: Targeted Attacks on Speech-to-Text

Adversarial example in the image domain:



[https://arxiv.org/
abs/1412.6572](https://arxiv.org/abs/1412.6572)

Similar principle for speech recordings:



[https://arxiv.org/
abs/1801.01944](https://arxiv.org/abs/1801.01944)

https://nicholas.carlini.com/code/audio_adversarial_examples/

Born-Again Neural Networks

Step 1: Train model on a classification dataset, minimizing cross-entropy with labels:



Step 2: Pass training data through model, producing pseudo-labels (not binarized):



Step 3: Train new model, minimizing cross-entropy with labels + cross-entropy with pseudo-labels:



Step 4: Return to step 2 and repeat until satisfied.

error:
17.22%, 16.59%

Step 5: Form ensemble of all models. (optional)

15.68%

http://metalearning.ml/papers/metalearn17_furlanello.pdf

Tons more

arxiv-sanity.com

The screenshot shows the homepage of arxiv-sanity.com. At the top, there is a search bar and navigation links for 'User:', 'Pass:', 'Login or Create'. Below the search bar are buttons for 'most recent', 'top recent', 'top hype', 'friends', 'discussions', 'recommended', and 'library'. A 'Find me on GitHub' link is also present. The main content area features a search bar with placeholder 'Search' and a 'Top papers based on people's libraries' section. It displays two paper cards: 'Deep Learning: A Critical Appraisal' by Gary Marcus and 'DeepMind Control Suite' by Yuval Tassa. Each card includes the author names, publication date, journal, page count, figure count, and a 'show similar | discuss' link.

deeplearn.org

The screenshot shows the 'Deep Learning Monitor' on deeplearn.org. It features three main panels: 'Hot Tweets', 'Hot Papers', and 'Fresh Papers'. The 'Hot Papers' panel is currently active, displaying a list of papers from January 2018. Each entry includes the title, authors, publication date, PDF link, Mendeley link, and a 'Super Hot' badge. The titles include 'DeepMind Control Suite', 'Characterizing Adversarial Subspaces Using Local Intrinsic Dimensionality', and 'Spatially transformed adversarial examples'. The 'Hot Tweets' and 'Fresh Papers' panels show similar lists of papers with their respective details.

Vienna



Deep Learning

Meetup

27 February 2018 @ A1 Telekom Austria

