

# (not a) Tutorial 12 - ML & -<sup>~</sup>\*'the future'^<sup>~</sup>-

Kevin Dick, PhD Biomedical Engineering  
Carleton University

Thursday 10<sup>th</sup> December, 2020

# ML Weekly Recap

Review of events from the ML community during the last 3 months!

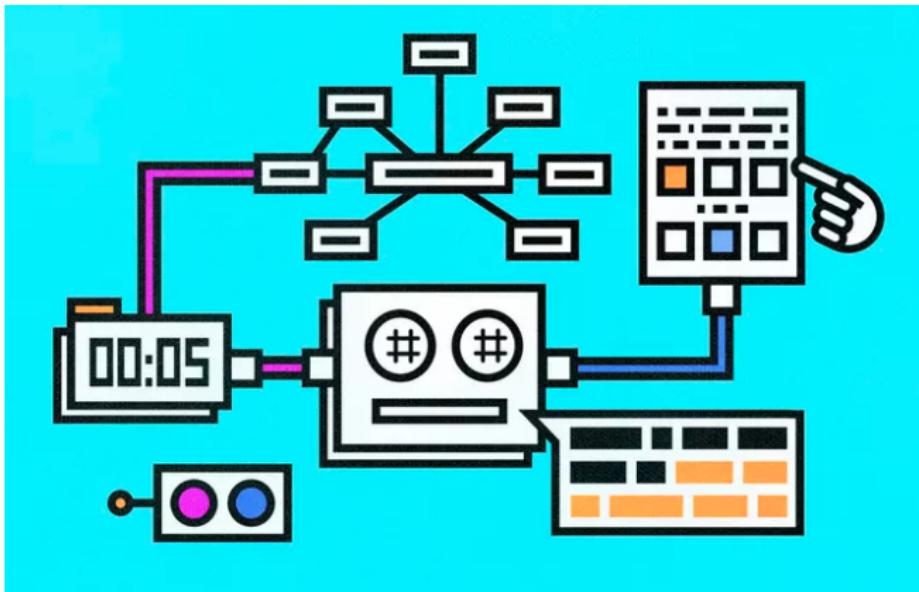
# ML Weekly (Sept. 18th)

1. (DL) "NVIDIA apologizes for **instant-sold-out** GeForce RTX 3080 cards"



# ML Weekly (Sept. 18th)

1. **(DL)** "NVIDIA apologizes for **instant-sold-out** GeForce RTX 3080 cards"
2. **(NLP)** A college student used GPT-3 to write **fake blog posts** and ended up at the top of Hacker News



# ML Weekly (Sept. 25th)

1. **(NLP)** Go Ahead, Try to Sneak Bad Words Past AI Filters—for Research

## Rethinking AI Benchmarking

Dynabench is a research platform for dynamic data collection and benchmarking. Static benchmarks have well-known issues: they saturate quickly, are susceptible to overfitting, contain exploitable annotator artifacts and have unclear or imperfect evaluation metrics.

This platform in essence is a scientific experiment: can we make faster progress if we collect data dynamically, with humans and models in the loop, rather than in the old-fashioned static way?



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(a)



(b)



(c)

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4. **(Vision)** Google is using AI to create stunning landscape photos using Street View imagery



# ML Weekly (Oct. 2nd)

## 1. (ML) Introducing the Distill Journal

The screenshot shows the homepage of the Distill Journal. At the top, there is a dark teal header with the word "Distill" and a small logo on the left, and "ABOUT" and "PRIZE" links on the right. The main title "Machine Learning Research Should Be Clear, Dynamic and Vivid. **Distill** Is Here to Help." is centered in a large, white, sans-serif font. Below the title, there are two sections: "A JOURNAL" featuring a laptop icon and text about clear explanations native to the Web, and "\$10,000 PRIZES" featuring a gold medal icon and text about outstanding work communicating and refining ideas.

Distill

ABOUT PRIZE

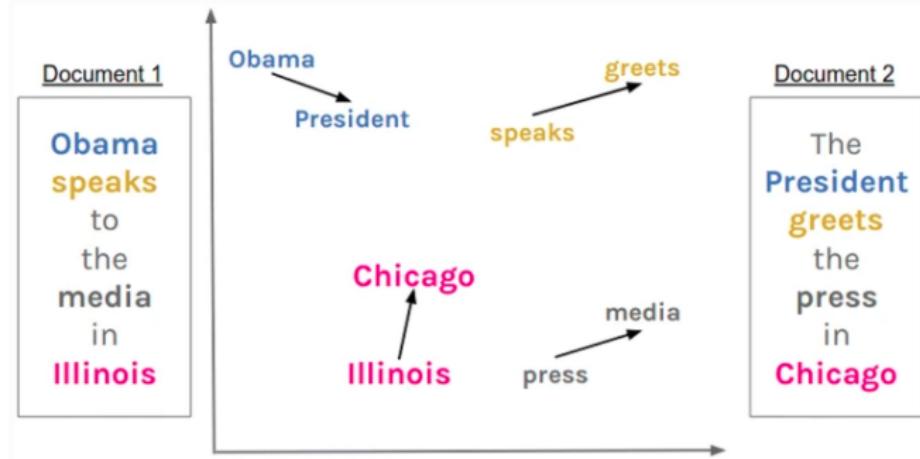
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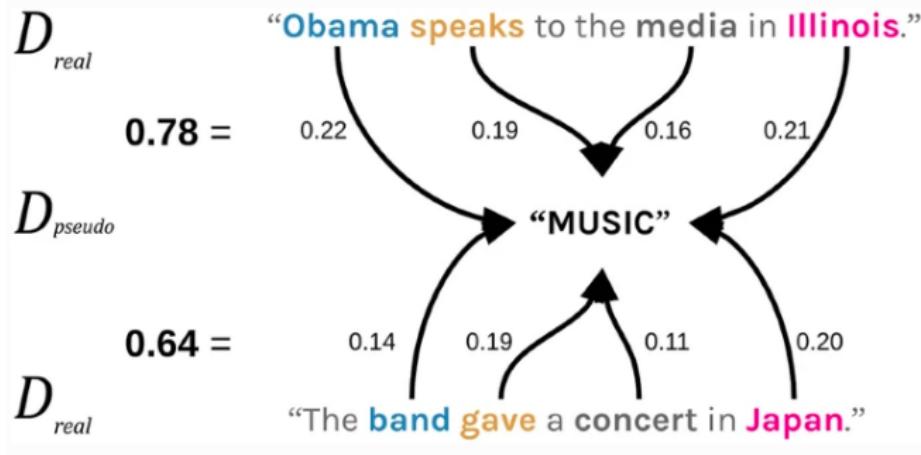
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1. (ML) Introducing the Distill Journal
2. (NLP) Concept Mover's Distance



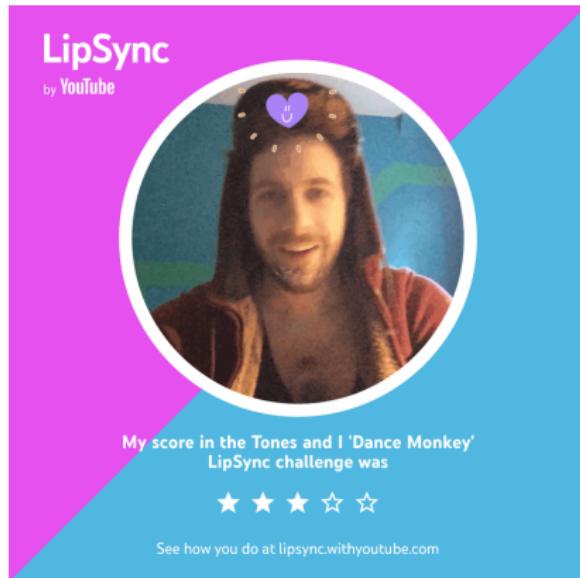
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# ML Weekly (Oct. 2nd)

1. **(ML)** Introducing the Distill Journal
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3. **(Vision)** Google launches AI lip-sync challenge



# ML Weekly (Oct. 9th)

1. (ML) NeurIPS 2020 Accepted Papers



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1. **(ML) NeurIPS 2020 Accepted Papers**
2. **(Vision) "Farewell Convolutions": Anonymous ICLR 2021 Paper Uses Transformers for Image Recognition at Scale**

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## AN IMAGE IS WORTH 16X16 WORDS: TRANSFORMERS FOR IMAGE RECOGNITION AT SCALE

**Anonymous authors**

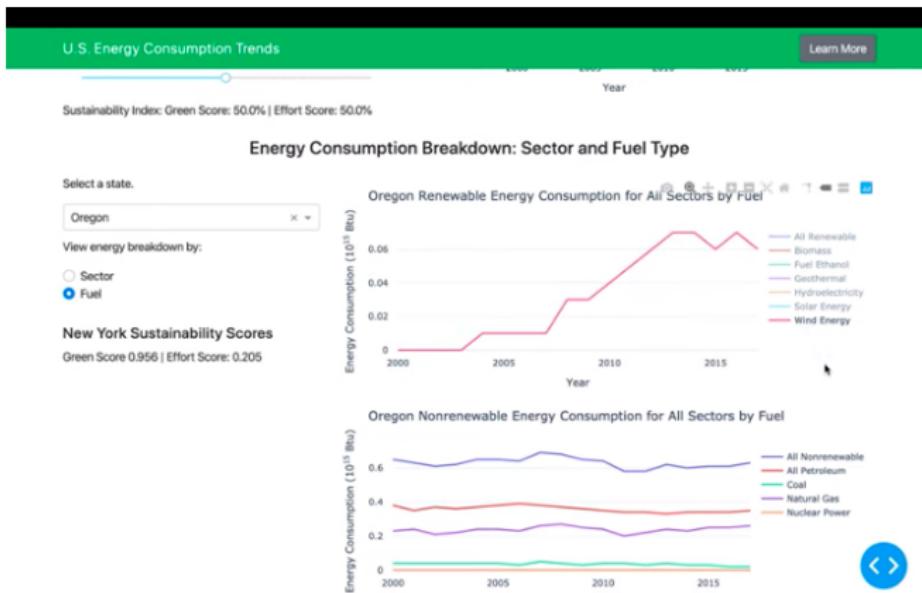
Paper under double-blind review

### ABSTRACT

While the Transformer architecture has become the de-facto standard for natural language processing tasks, its applications to computer vision remain limited. In vision, attention is either applied in conjunction with convolutional networks, or used to replace certain components of convolutional networks while keeping their overall structure in place. We show that this reliance on CNNs is not necessary and a pure transformer can perform very well on image classification tasks when applied directly to sequences of image patches. When pre-trained on large amounts of data and transferred to multiple recognition benchmarks (ImageNet, CIFAR-100, VTAB, etc.), Vision Transformer attain excellent results compared to state-of-the-art convolutional networks while requiring substantially fewer computational resources to train.

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3. (DS) Plotly Visualization



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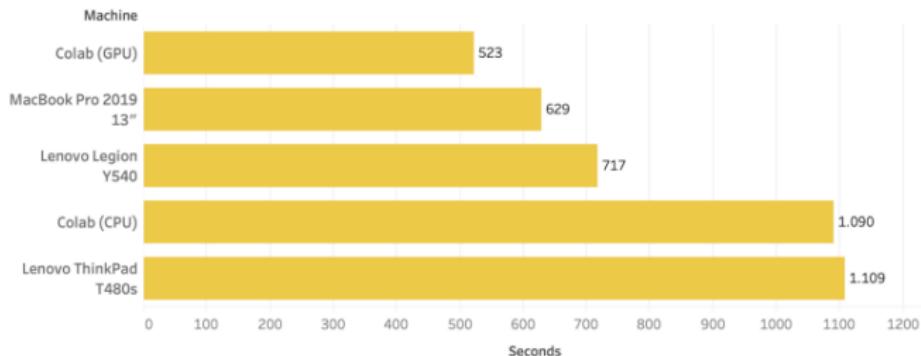
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3. **(DS)** Plotly Visualization
4. **(NLP)** Reddit: thegentlemetre ("GPT-3 Bot Spends a Week Replying on Reddit, Starts Talking About the Illuminati")



# ML Weekly (Oct. 16th)

## 1. (ML) Google Colab: How does it compare to a GPU-enabled laptop?

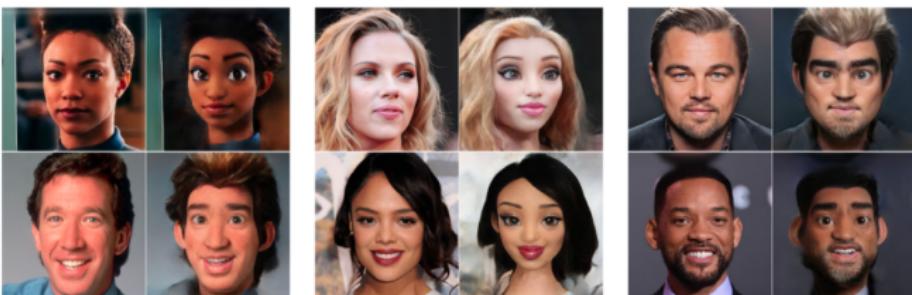
Fashion-MNIST - Training Time (seconds) Comparison



Sum of Seconds for each Machine.

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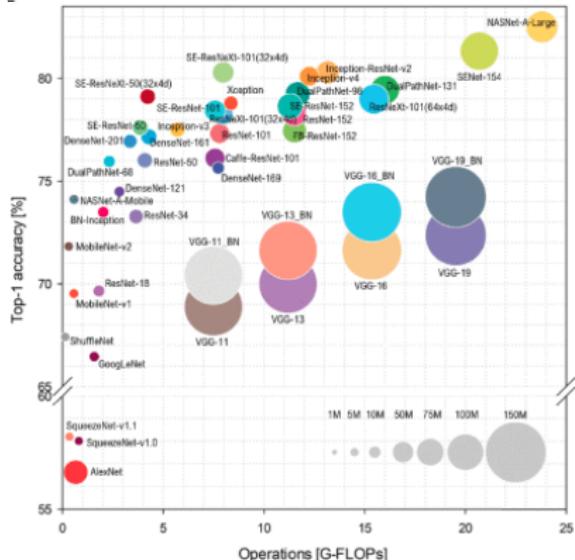
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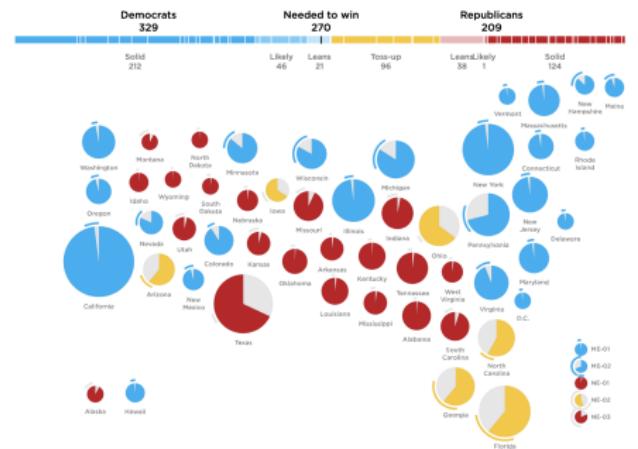
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4. **(Vision)** Benchmark analysis of representative deep neural network architectures



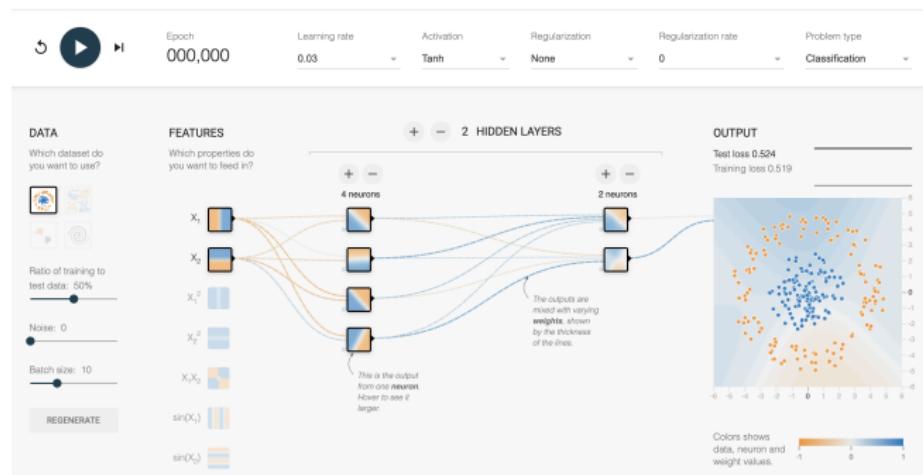
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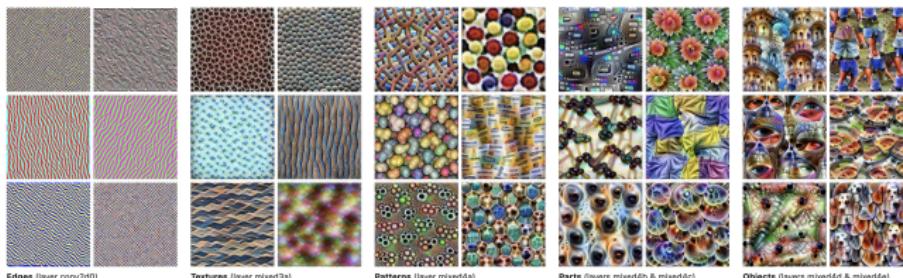


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3. **(Vision)** Tinker With a Neural Network Right Here in Your Browser

## Feature Visualization

How neural networks build up their understanding of Images



Feature visualization allows us to see how GoogLeNet [1], trained on the ImageNet [3] dataset, builds up its understanding of images over many layers. Visualizations of all channels are available in the [annotation](#).

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3. **(RL)** DeepMind Open-Sources Lab2D: Environmental Design for Multi-Agent RL Research

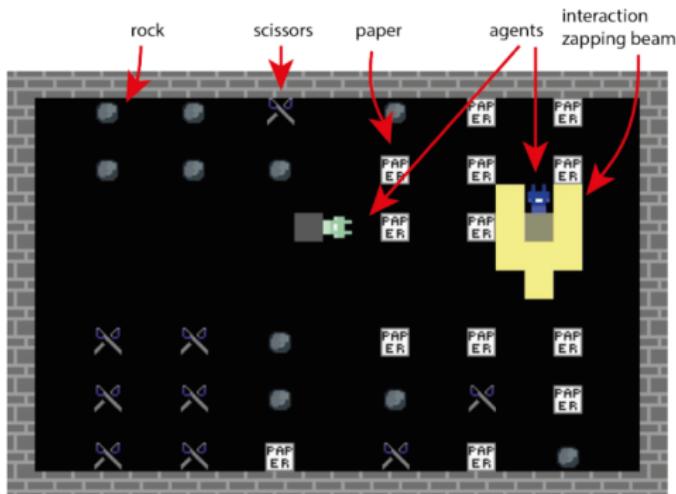
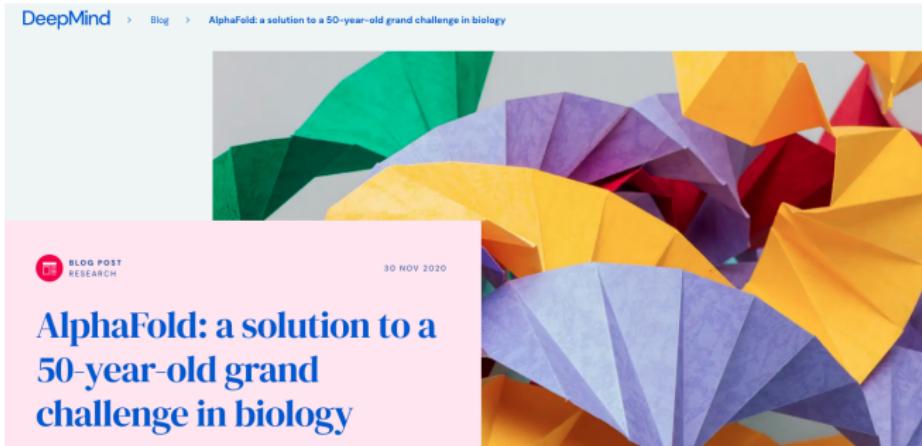


Figure 1 | “Running With Scissors” screenshot.

# ML Weekly (Dec. 4th)

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  2. **(NEW! Ethics!)** Timnit Gebru "Leaves" Google
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3. AI Agents will increasingly show “**super-human**” ability not just digitally but also *in the wild* (e.g. Chess, Go, StarCraft II, Atari Games, Ping-Pong, Curling, etc.)
4. The role of AI use (and regulation) within Big Tech will be critical to privacy preservation in this next decade (e.g. ClearviewAI, NYT “Rabbit Hole”, Dr. Shoshana Zuboff’s “Surveillance Capitalism”, Timnit Gebru, etc.)

# Open Discussion

What are your thoughts? Where will ML take you?

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