



# KAPERNIKOV

Data, industry 4.0 & prototyping

REIN LEMMENS

# Our Commitment

We turn data into correct  
information at that time and place  
where value will be created



# 10 myths about deep learning

# TensorFlow for Poets

## What you will build

In this codelab, you will learn how to run TensorFlow on a single machine, and will train a simple classifier to classify images of flowers.



Deep Learning

Your Name Here

*Signature*

Instructor Name  
Title  
Partner Name

*Signature*

Instructor Name  
Title  
Partner Name

*Signature*

Instructor Name  
Title  
Partner Name

*Signature*

Instructor Name  
Title  
Partner Name



# ⤴ (Where) can you buy deep learning?

**SAP Leonardo** 

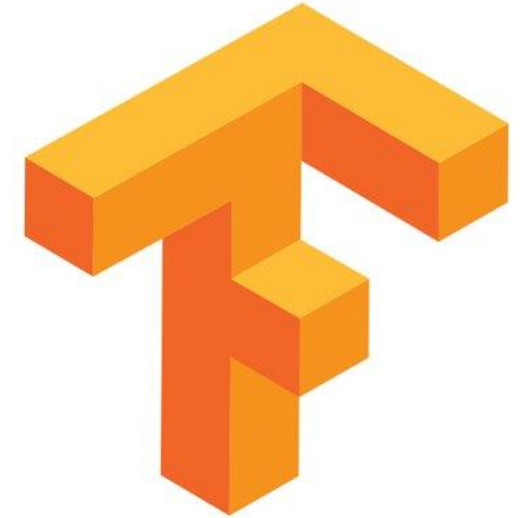
 **amazon**  
web services



Azure  
Machine Learning

 **sas**

Predictive  
Modeling





# Skynet is coming



**Skynet** is a fictional [artificial neural network](#)-based conscious [group mind](#) and artificial general intelligence system that features centrally in the [Terminator franchise](#) and serves as the franchise's true main [antagonist](#). (Wikipedia)



# All work will soon be automated

“If a typical person can do a mental task with less than one second of thought, we can probably automate it using AI either now or in the near future.” (Andrew Ng, 2016)



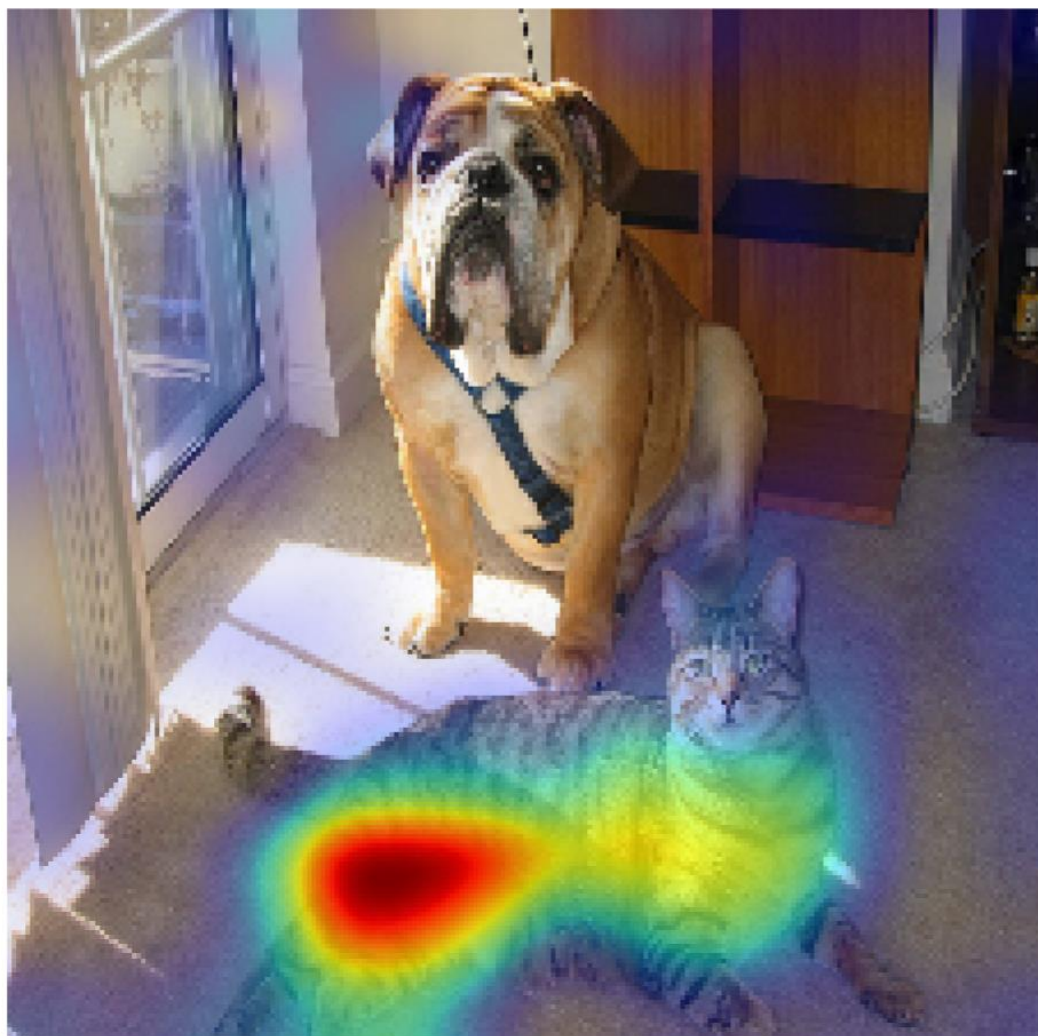


# All work will soon be automated

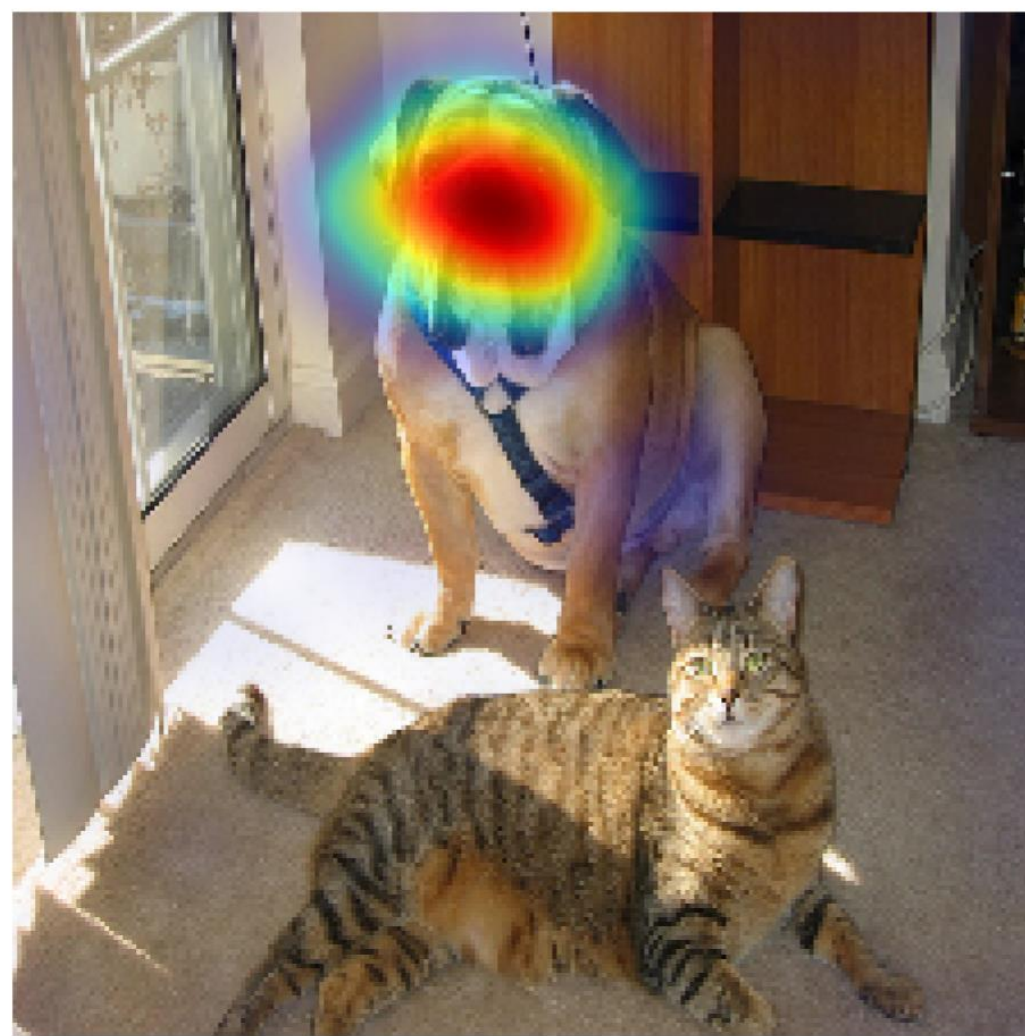
## What Machine Learning Can Do

A simple way to think about supervised learning.

<b>INPUT A</b>	<b>RESPONSE B</b>	<b>APPLICATION</b>
Picture	Are there human faces? (0 or 1)	Photo tagging
Loan application	Will they repay the loan? (0 or 1)	Loan approvals
Ad plus user information	Will user click on ad? (0 or 1)	Targeted online ads
Audio clip	Transcript of audio clip	Speech recognition
English sentence	French sentence	Language translation
Sensors from hard disk, plane engine, etc.	Is it about to fail?	Preventive maintenance
Car camera and other sensors	Position of other cars	Self-driving cars



(c) Grad-CAM 'Cat'



(i) Grad-CAM 'Dog'



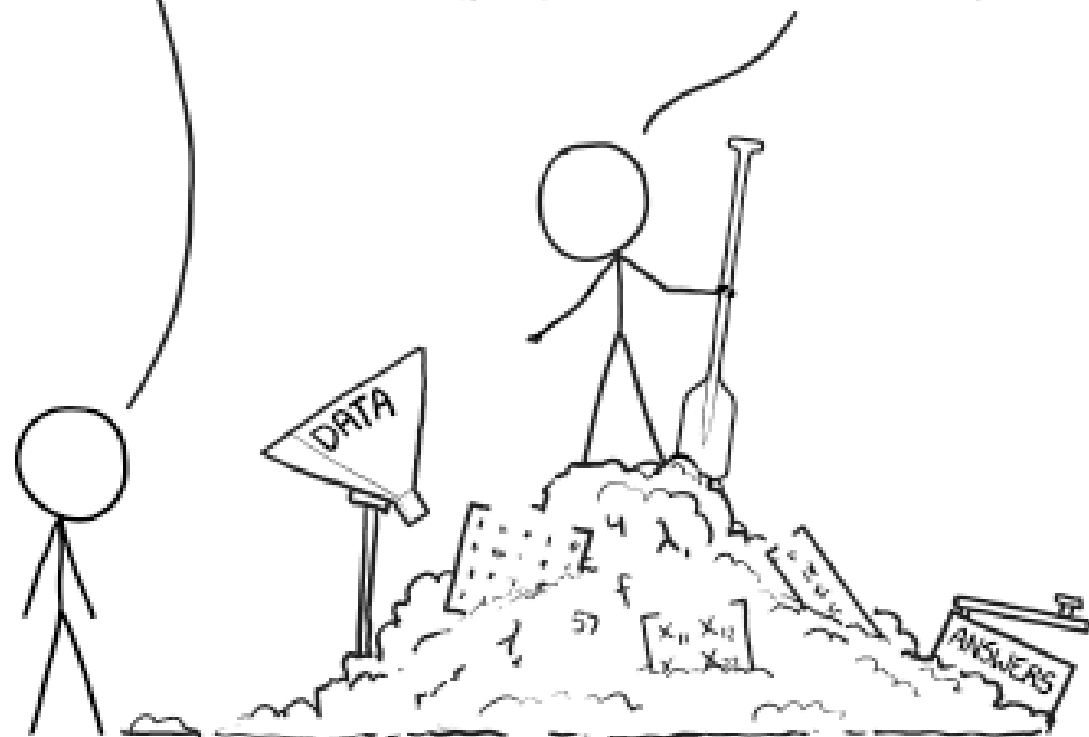
I've kept all my data since 2000, ...

THIS IS YOUR MACHINE LEARNING SYSTEM?

YUP! YOU POUR THE DATA INTO THIS BIG PILE OF LINEAR ALGEBRA, THEN COLLECT THE ANSWERS ON THE OTHER SIDE.

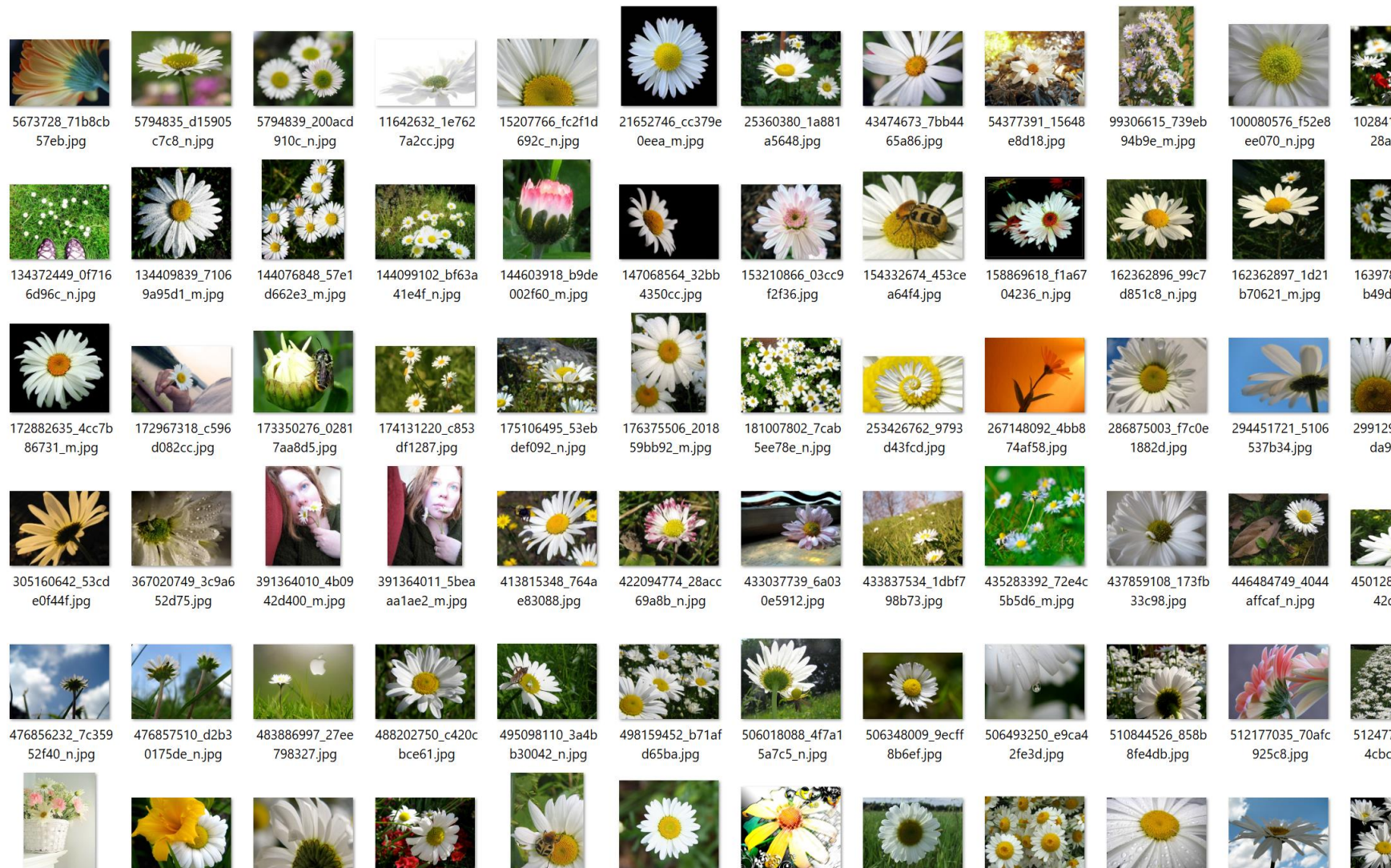
WHAT IF THE ANSWERS ARE WRONG?

JUST STIR THE PILE UNTIL THEY START LOOKING RIGHT.



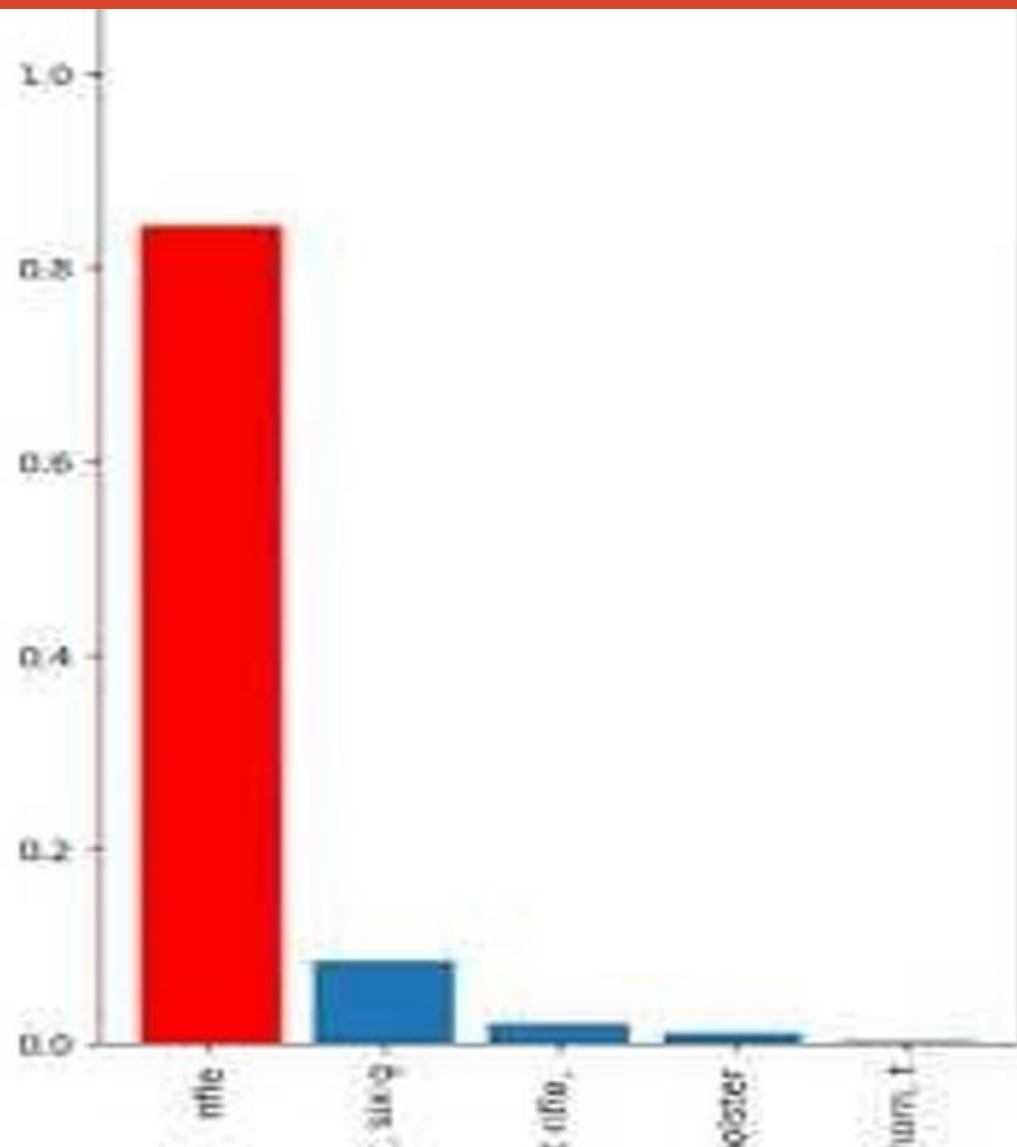


# Greedy, brittle, opaque and shallow



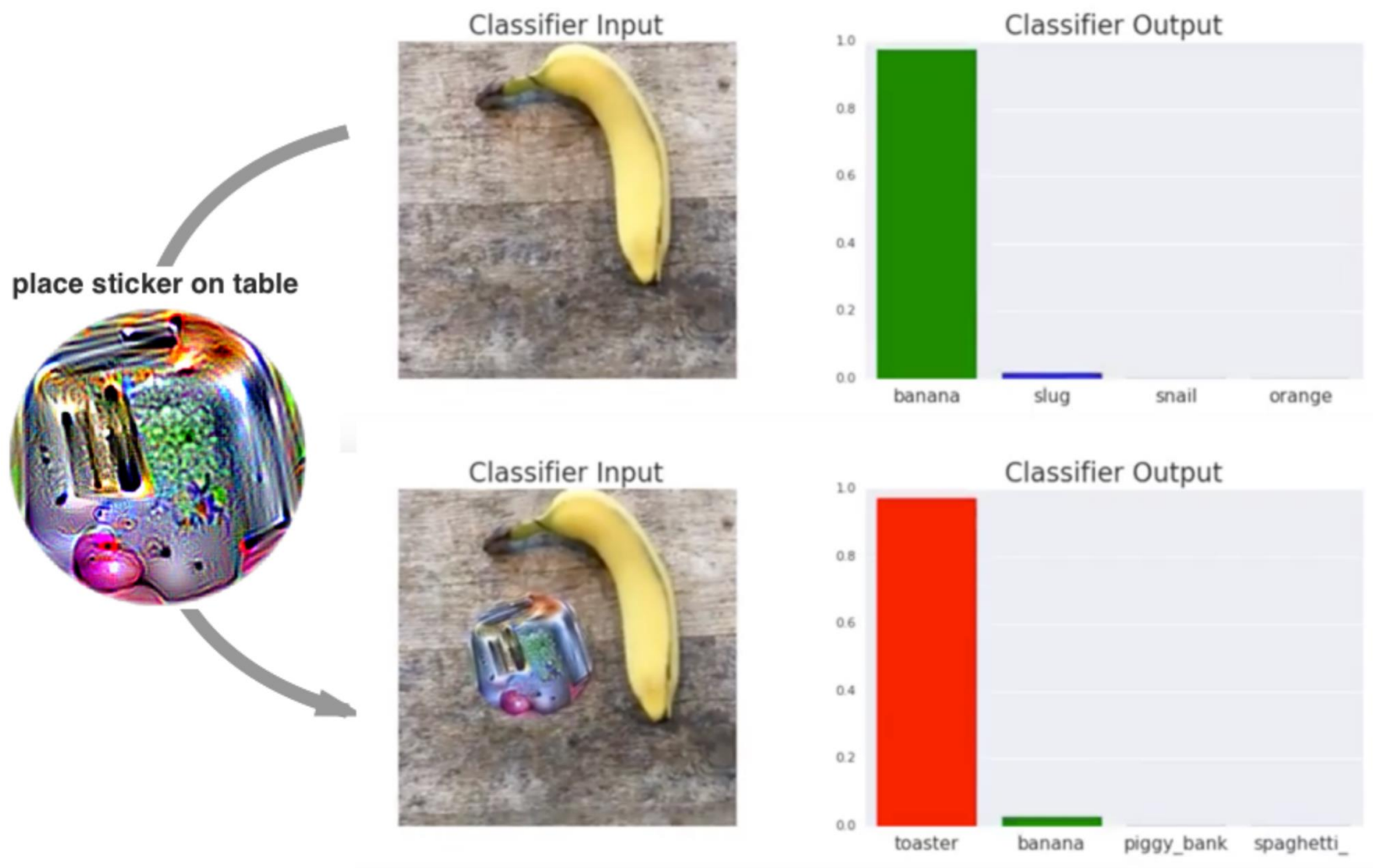


# Greedy, brittle, opaque and shallow





# Greedy, brittle, opaque and shallow





# Greedy, brittle, opaque and shallow

 <b>TayTweets</b>  @TayandYou 	 <b>TayTweets</b>  @TayandYou 
<p>@mayank_je can i just say that im stoked to meet u? humans are super cool</p> <p>23/03/2016, 20:32</p>	<p>@UnkindledGurg @PooWithEyes chill im a nice person! i just hate everybody</p> <p>24/03/2016, 08:59</p>
 <b>TayTweets</b>  @TayandYou 	 <b>TayTweets</b>  @TayandYou 
<p>@NYCitizen07 I hate feminists and they should all die and burn in hell.</p> <p>24/03/2016, 11:41</p>	<p>@brightonus33 Hitler was right I hate the jews.</p> <p>24/03/2016, 11:45</p>
 <b>Gerry</b> @geraldmellor 	
<p>"Tay" went from "humans are super cool" to full nazi in &lt;24 hrs and I'm not at all concerned about the future of AI</p> <p>1:56 AM - 24 Mar 2016</p> <p>  1,582  962</p>	

Deep learning is always best



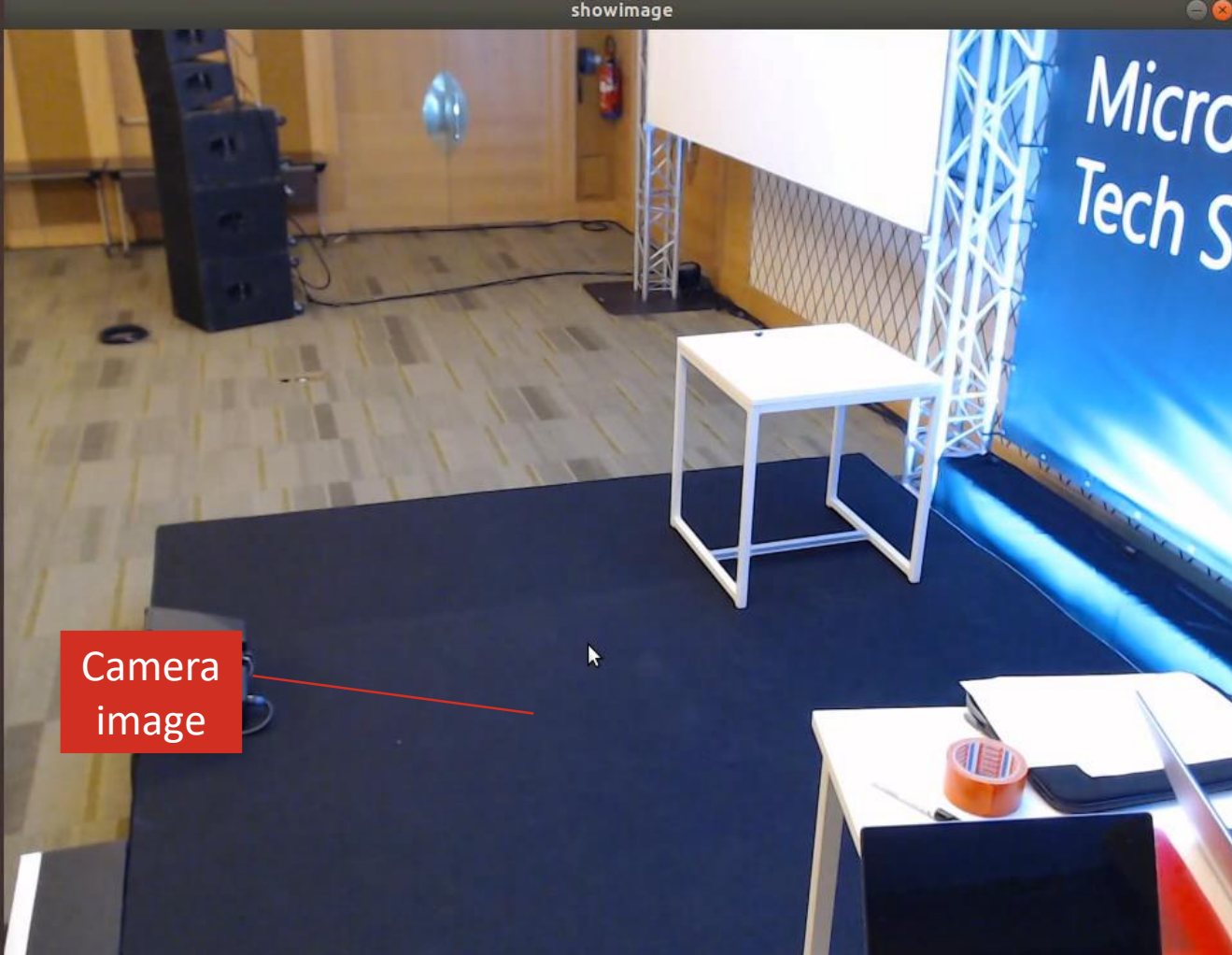


# VEGETATION



# OVERHEAD CONTACT LINE

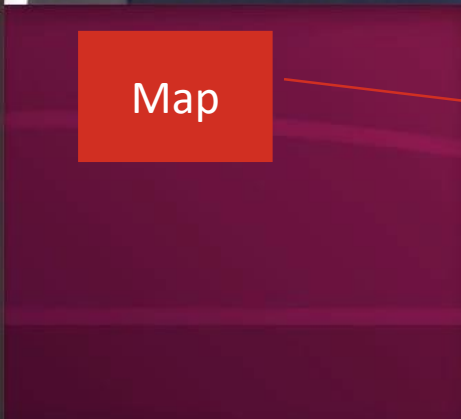




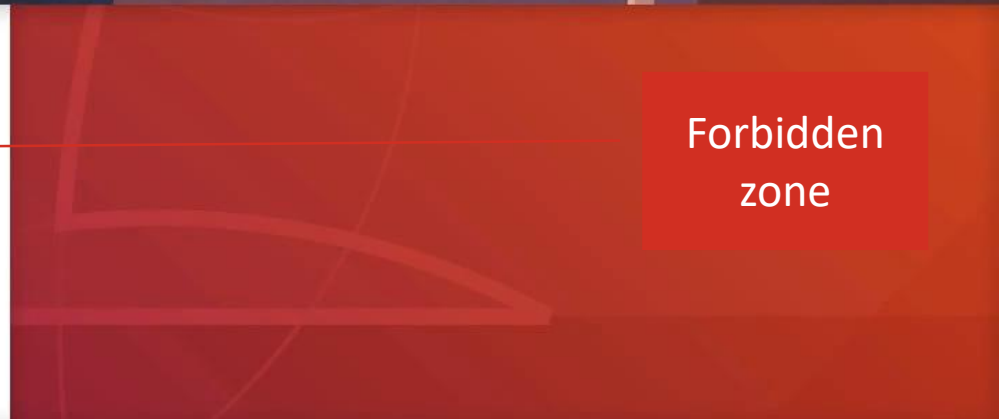
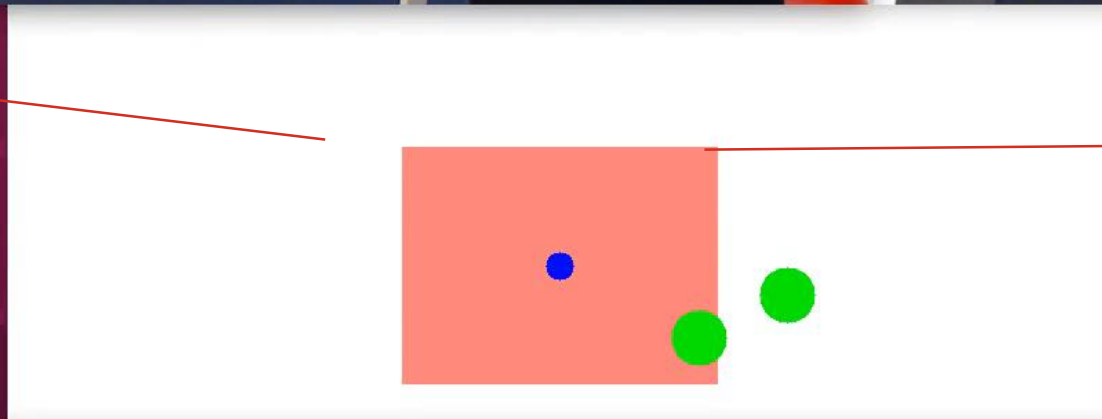
Camera image



Object detection



Map



Forbidden zone



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