

---

ALL U  
NEED

J. Willard Marriott Library

THE UNIVERSITY OF UTAH

---

# Machine Learning meets Library Archives

Harish Maringanti  
Associate Dean of IT & Digital Library

Dhanushka Samarakoon  
Assistant Head of Software Development

Bohan Zhu  
Software  
Developer

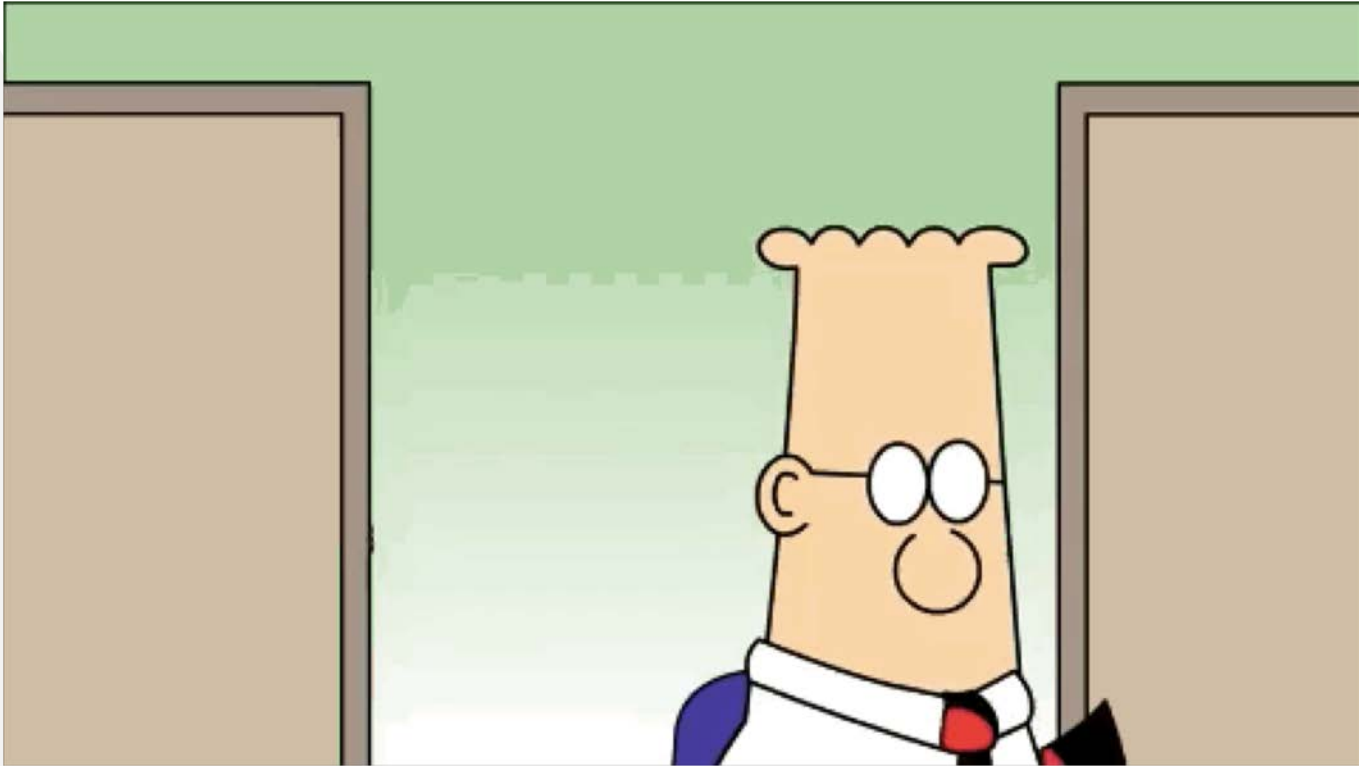
Brian McBride  
Head of Digital Infrastructure Development

---

# Historical Images: Human or Machine generated metadata ?



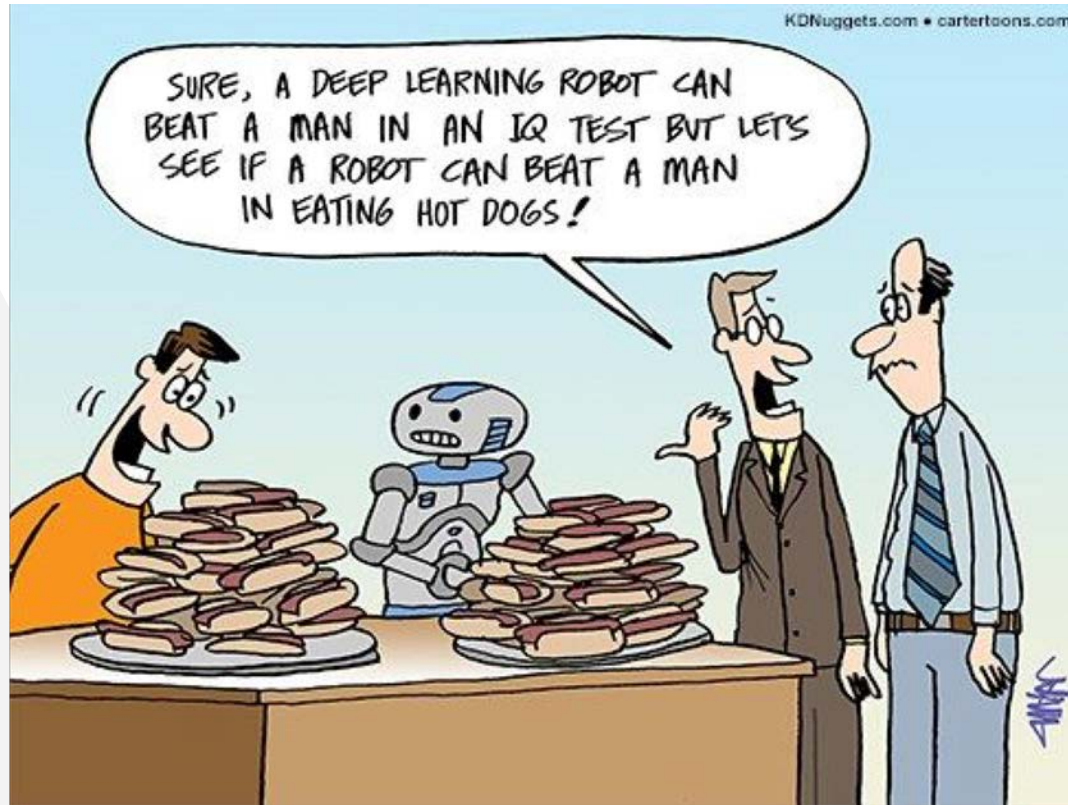
# Problem



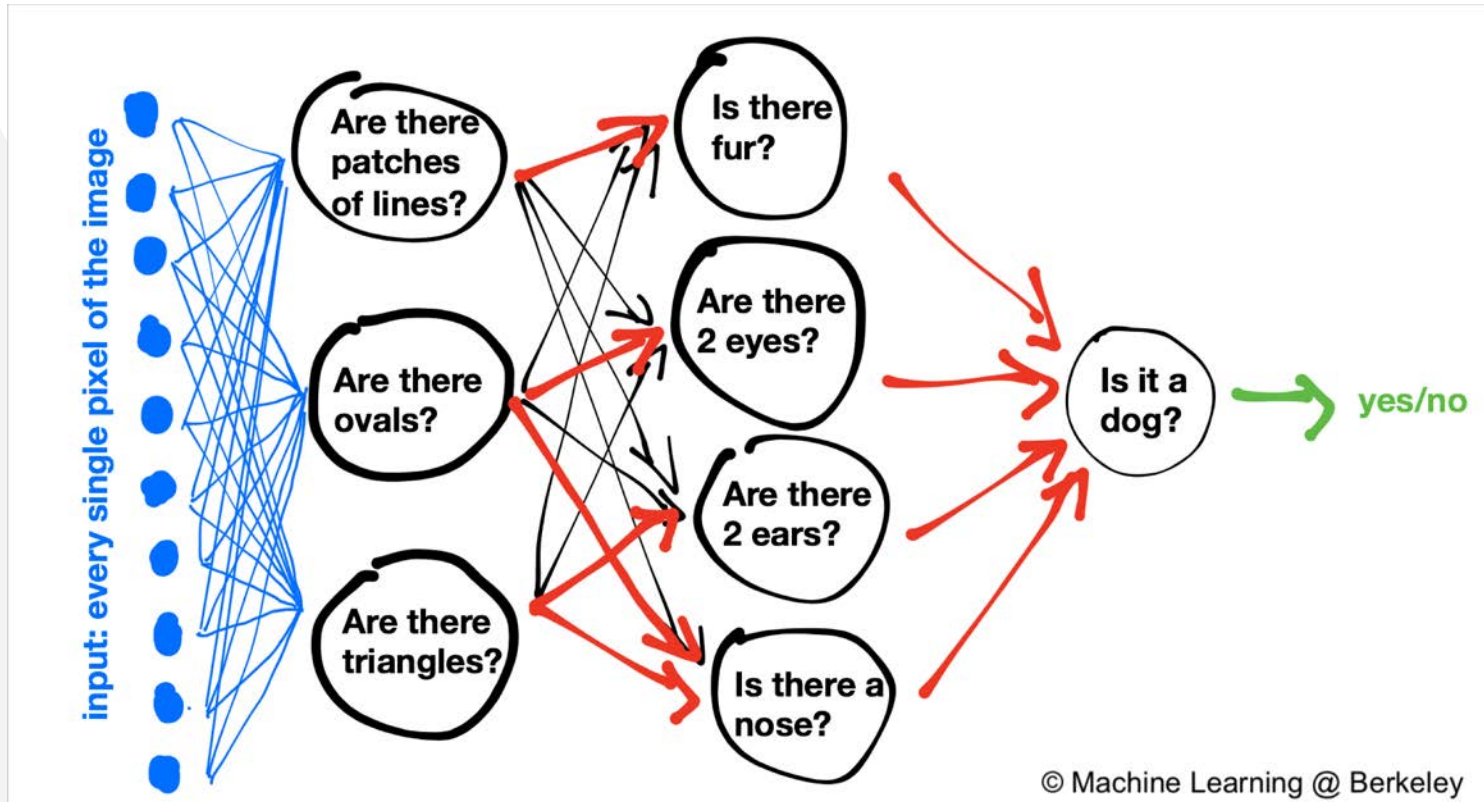
# Problem Statement



# Our approach - Machine Learning / Image Analysis



# What is Machine Learning?



# Model Development

 TensorFlow™

CAT?



Output Layer

Activated  
Neurons

Input Layer

DEEP  
NEURAL  
NETWORKS

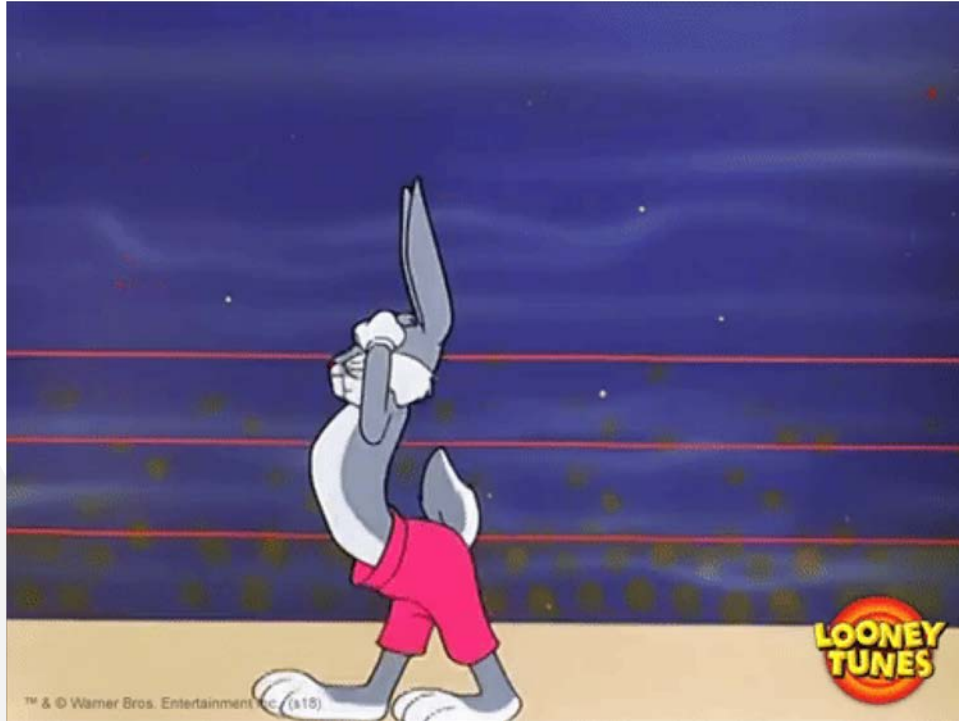
“

# ***SWOT Analysis***

”



# Strengths



# Weaknesses



# Opportunities



# Threats



# Impact



If you think you are too  
small to make a difference,  
try sleeping with a mosquito.

Dalai Lama XIV

# The Domino Effect



## Concluding thoughts...



# TAKING RISK

There's a fine line between taking a calculated risk and doing something dumb.

**Forbes**

Billionaires

Innovation

Leadership

Money

Consumer

Industry

43,006 views | Jul 1, 2015, 01:42pm

# Google Photos Tags Two African-Americans As Gorillas Through Facial Recognition Software



# Concluding thoughts...



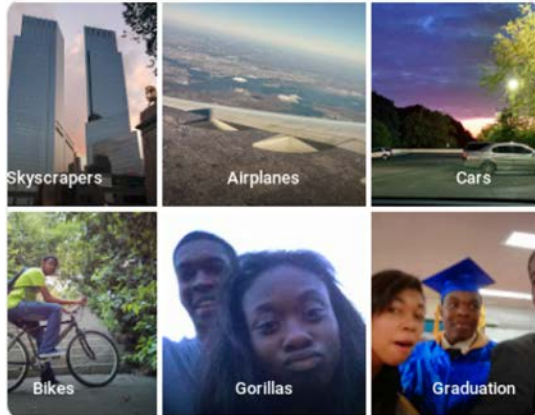
Jacky lives on @jalcine@playvicio...

@jackyalcine

Follow



Google Photos, y'all fucked up. My friend's not a gorilla.



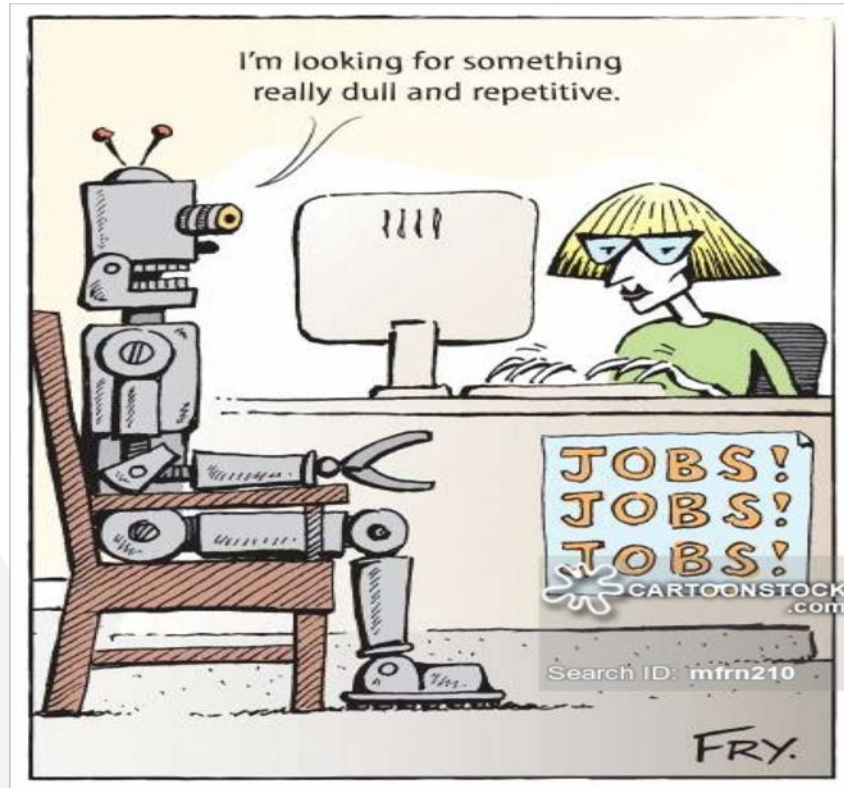
8:22 PM - 28 Jun 2015

3,293 Retweets 2,303 Likes



This past May, Flickr's facial recognition software labeled both black and white people as "animals" and "apes" (these tags were promptly removed). Furthermore, many Native American dancer photos were tagged with the word "costume," which added great insult to the community.

# Concluding thoughts...



# Credits

- ▶ <https://www.npr.org/sections/alltechconsidered/2016/06/27/480639265/human-or-machine-can-you-tell-who-wrote-these-poems>
- ▶ <https://media.giphy.com/media/xTiTnGeUsWOEwsGoG4/giphy.gif>
- ▶ <http://www.wisegeek.net/how-do-i-lay-brick.htm#laying-brick-wall>
- ▶ <https://i.pinimg.com/736x/39/6d/a2/396da2520a58a3b0936154036f812965.jpg>
- ▶ <https://ml.berkeley.edu/blog/assets/tutorials/3/recognize%20dog%20neural%20network.png>
- ▶ [https://cdn-images-1.medium.com/max/1600/1\\*fy88j-fYXR6a-Vw2xZkV6Q.gif](https://cdn-images-1.medium.com/max/1600/1*fy88j-fYXR6a-Vw2xZkV6Q.gif)
- ▶ <https://media.giphy.com/media/1dMNqVx9Kb12EBjFrc/giphy.gif>
- ▶ <https://media.giphy.com/media/PfFtibPKBbQrK/giphy.gif>
- ▶ <https://media.giphy.com/media/SqT6AxUf66uMo/giphy.gif>
- ▶ <https://media.giphy.com/media/1yTaZMgUG8lDh9LV8s/giphy.gif>
- ▶ <https://quotefancy.com/quote/1646/Dalai-Lama-XIV-If-you-think-you-are-too-small-to-make-a-difference-try-sleeping-with-a>
- ▶ <https://media.giphy.com/media/hrkMkmWuX6EWk/giphy-downsized-large.gif>
- ▶ [http://1.bp.blogspot.com/\\_92ltgE9W130/S82k0fxw6ml/AAAAAAAAADI/flEpVdQFhPk/s1600/risk-taking-2.jpg](http://1.bp.blogspot.com/_92ltgE9W130/S82k0fxw6ml/AAAAAAAAADI/flEpVdQFhPk/s1600/risk-taking-2.jpg)
- ▶ [http://lowres.cartoonstock.com/recruitment-recruitment-job\\_interviews-human\\_resources-jobs-robot-mfrn210\\_low.jpg](http://lowres.cartoonstock.com/recruitment-recruitment-job_interviews-human_resources-jobs-robot-mfrn210_low.jpg)
- ▶ <http://www.ciker.com/clipart-442301.html>

# Thank You!



- a man and a woman sitting at a table. ( $p=0.000579$ )
- a man and a woman sitting in front of a laptop computer. ( $p=0.000110$ )
- a man and a woman sitting at a table with a laptop. ( $p=0.000096$ )

ALL U  
NEED



**J. Willard Marriott Library**

THE UNIVERSITY OF UTAH