

# Real-time Video Analytics and Alerting Using Deep Learning

Jasper Horrell, PhD

DataCon Africa 2018

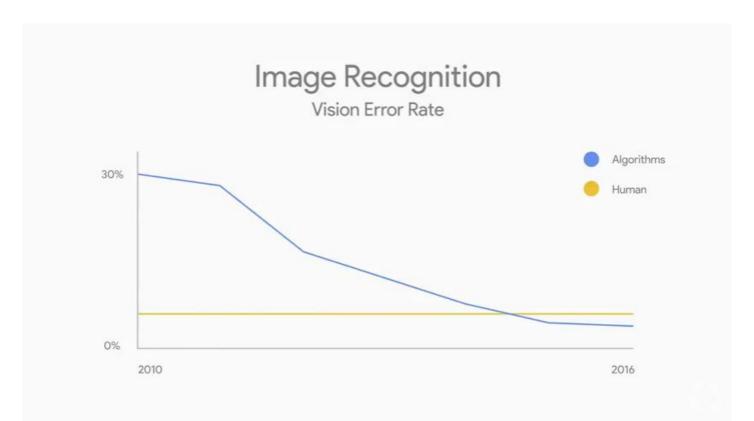


# Deep Data

www.deepdata.works

Powerful technology. Positive impact.

### Timing the technology





# If a camera could tell you what it was seeing in real-time...

What could be done with that... in the real world?

# DeepAlert || ||

Always Looking Out For You





### Towards global scale real-time alerting

Alerting that is useful, timely, relevant, responsible

Strong machine learning focus

(also IoT, cloud, HPC, etc.)

### **Alert on Trolley Pushers Not Dog Walkers or Prams**





Deep Alert @deepalertsystem 

47m

KCW-002 thinks this could be a trolley pusher (75.1%) at 08h05:53 on 19 May







Alert @deepalertsystem 

- 2h 002 is fairly sure this is a pram pusher (94.9%) at 12h13:52 on 9 May 2016



### **Applications**



Security

Wildlife protect

Occup. health & safety

Production monitoring

**Smart cities** 

Forest fires alerts





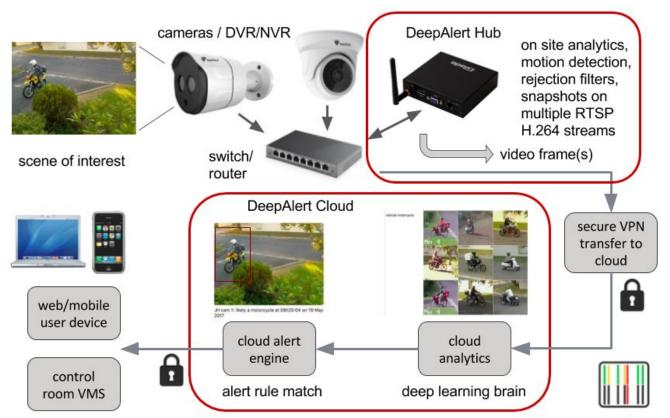


etc, etc.

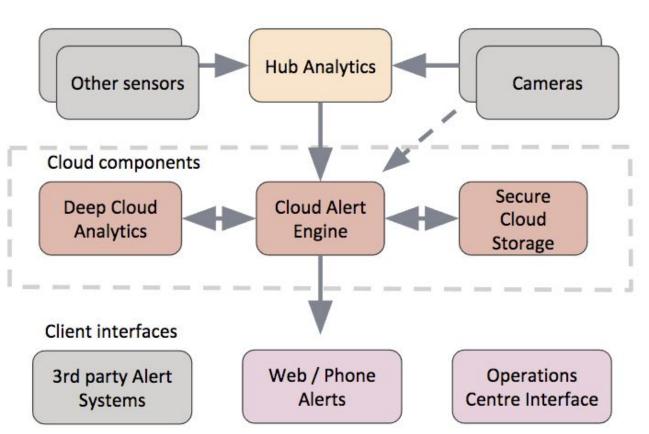
(if a human can look at a scene and want to know something useful about it, we can pretty much train up the system to alert on that)











### **Scene Understanding**





Deep Alert @deepalertsystem ≜ · 2h

KCW-001 thinks this could be a car being washed (87.8%) at 09h53:17 on 11 May 2016





Deep Alert @deepalertsystem 

· 3h

KCW-002 is fairly sure this is a patrol car (95.0%) at 10h56:11 on 9 May 2016



### **Targeted Alerting**





Deep Alert @deepalertsystem 

· 2h

KCW-001 is fairly sure this is a load and offload activity (94.1%) at 12h16:51 on 9 May 2016





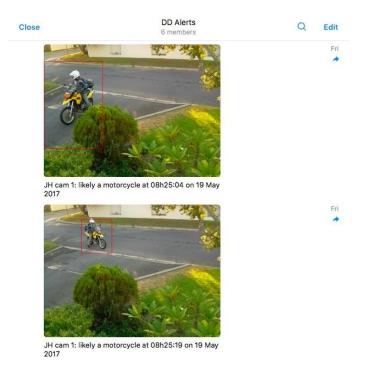
JH cam 1: likely people activity (person carrying something big?) at 08h06:51 on 25 May 2017

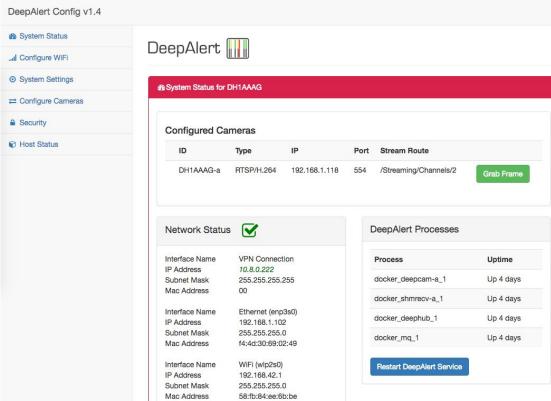
### Web and Mobile Interfaces DeepAlert











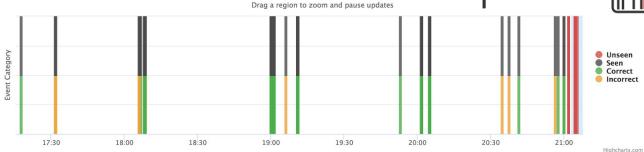
### DeepAlert |||| ♥ DeepAlert Demo Twitter ♠ Mon Site 6 ■ Mon Site 8 ■ Mon Site 5&7 ■ LB Hik Colour **♦** LB Hik Thermal ■ Industria View 1 ◆ Industria View 2 ■ Industria View 3 ■ Industria View 4 ■ Industria View 5 ■ Industria View 6 ■ Industria View 7 ♠ Mon Site Entrance

### **Event Timeline**

DeepAlert







Showing events from 1/17/2017, 7:15:27 PM to 1/17/2017, 11:07:39 PM. (Updated: Tue Jan 17 19:06:49 2017)





people.person







people.carrying-big







people.group





people.pram







people.trolley







vehicle.commercial



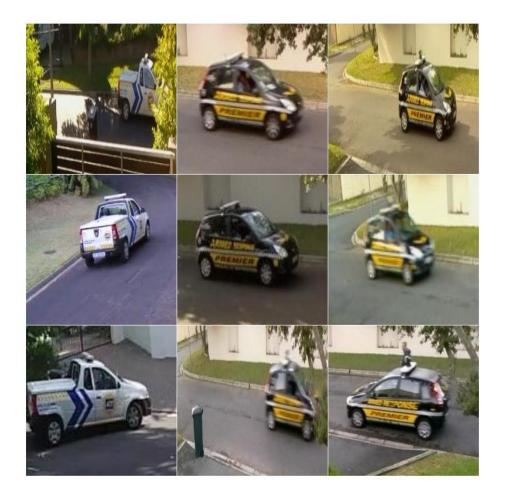




vehicle.patrol







vehicle.trailer



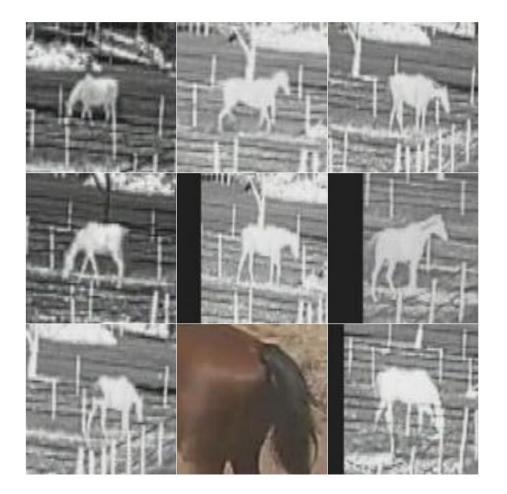




animal.horse



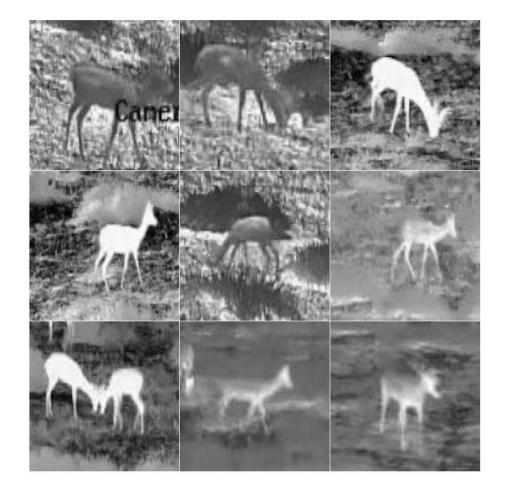




animal.buck





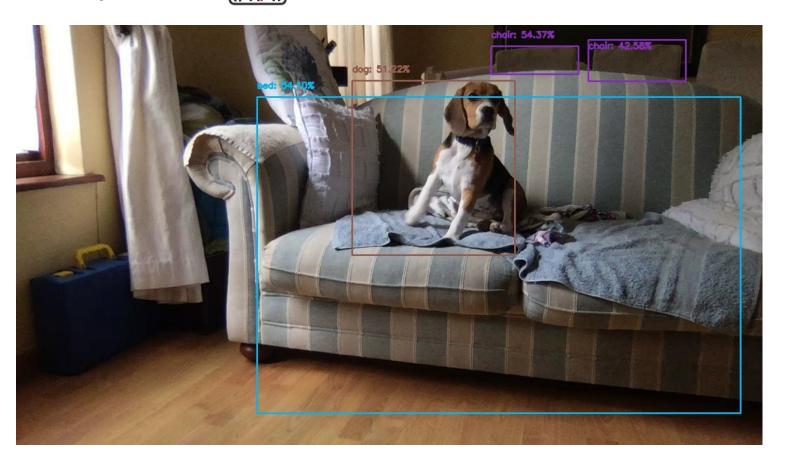




### What about busy scenes?

Full Scene Analysis (object detection)















# Questions?

jasper@deepdata.works, www.deepdata.works