Drone footage human tracking and face detection (P45)

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Team (real humans) (still)

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Self-proposed project
Problem

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- **Why?** Several use cases
  - mobile surveillance
  - abnormal event detection
Human detection

*Darknet YOLOv3 model*

- Train on top of pre-trained weights
- HPC rocket cluster
- Whole COCO 2017 dataset images on people
- Transfer learning with frozen layers?  
  - didn’t use - not performant
- Settled on a smaller model  
  - to speed up training and detection
Drone control

- Tello Edu drone (little and safe)
- Centering the person by turning
- Keeping the same distance
- FPS with tiny YOLO ok, on CPU around 20
- Proportional controller
Main takeaways

- HPC is a great resource for training models
- Neural networks are HARD but impressive
- Setup is dependency HELL
- Pair programming is GOOD
- Frame rate is IMPORTANT
Demo

https://youtu.be/wiRmMsBVlsC
Thanks

Project repository:

https://github.com/TaliKert/drone-video-ml