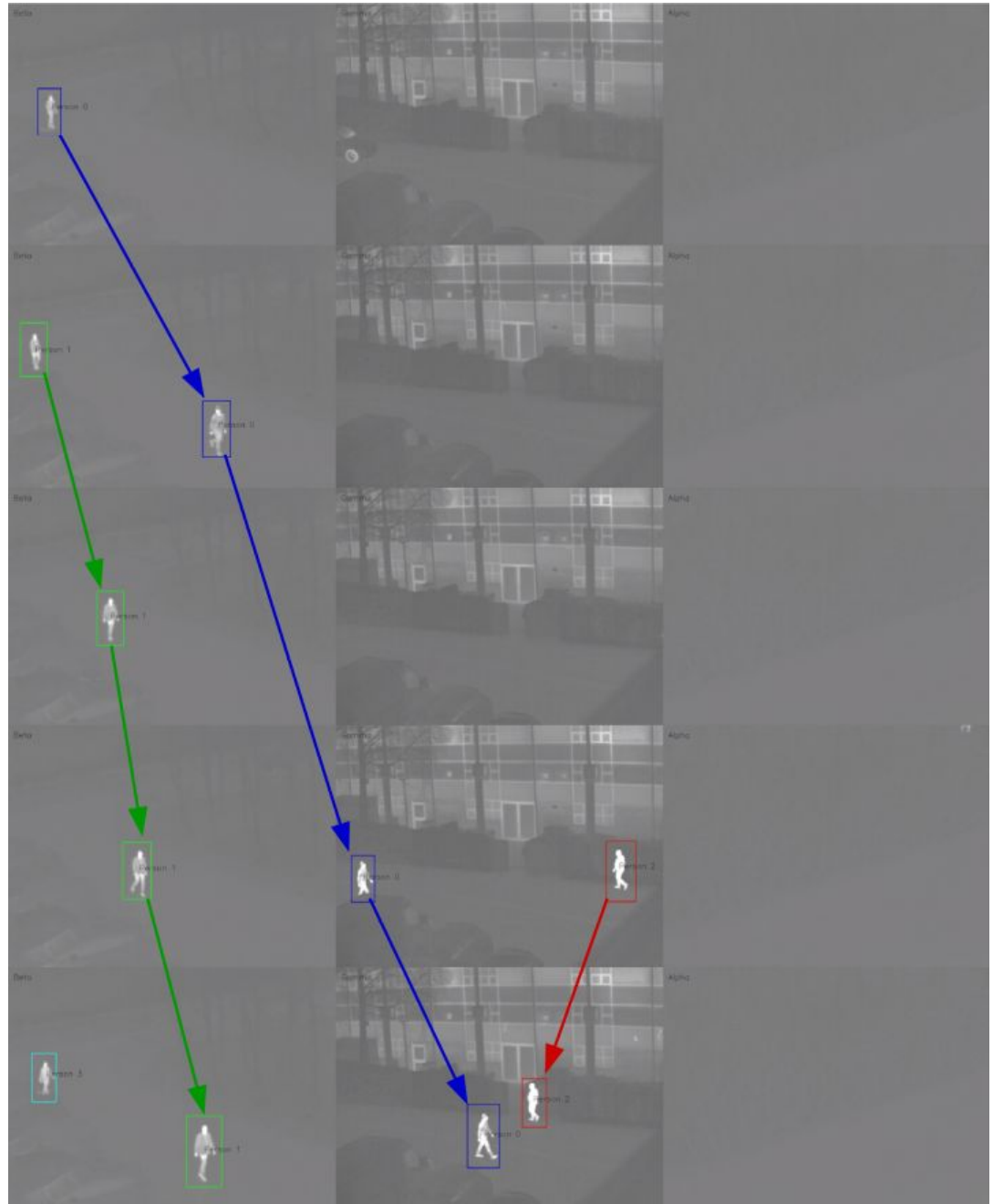


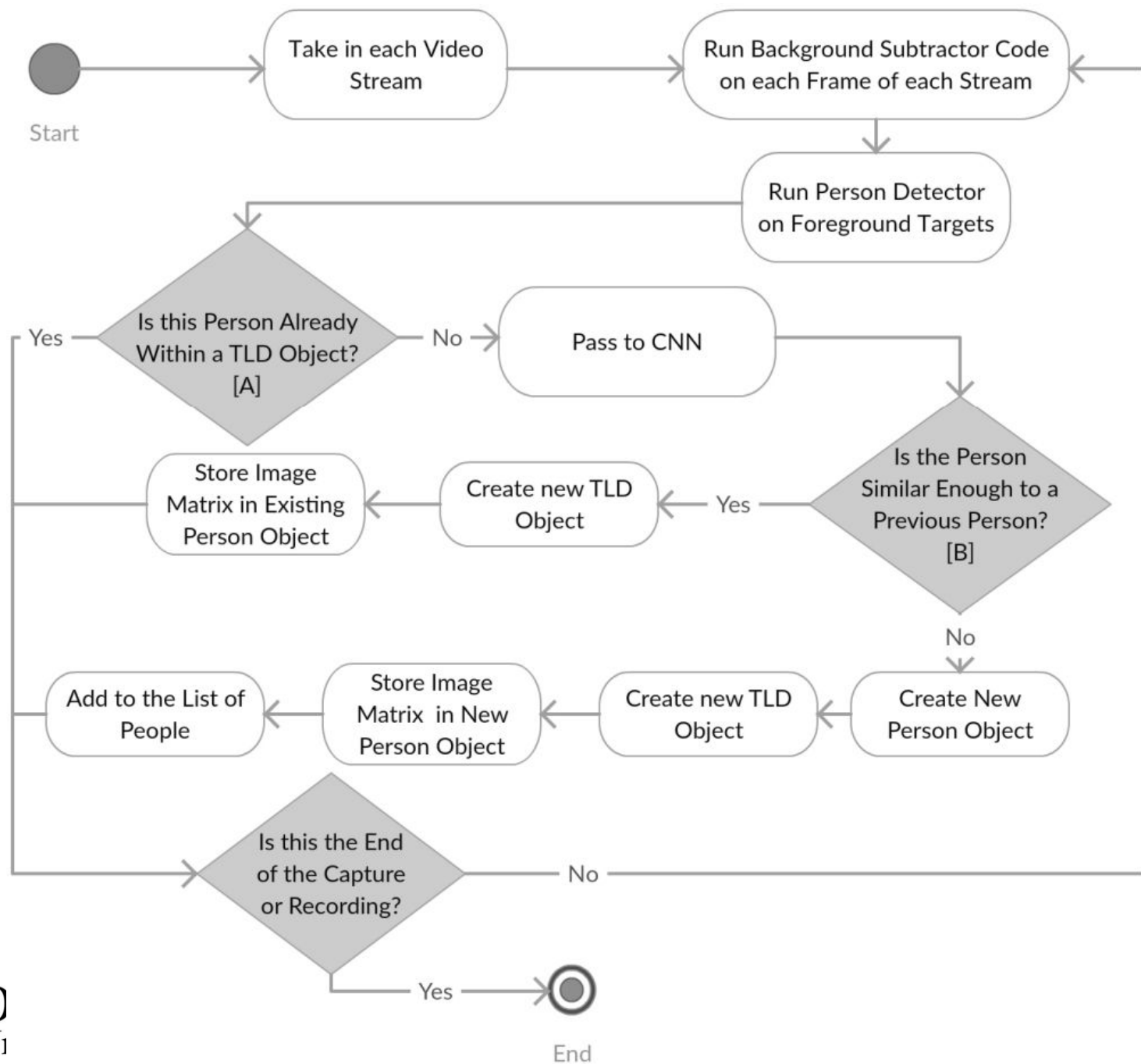
# On the Use of Deep Learning for Open World Person Re-Identification in Thermal Imagery

Thomas Robson

# The Problem

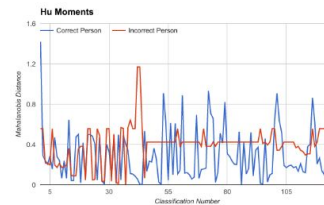
## Open World Person Re-Identification in Thermal Imagery



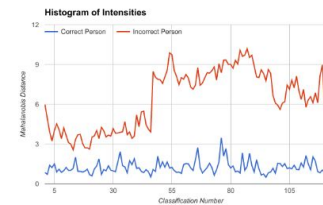


# Previous Work

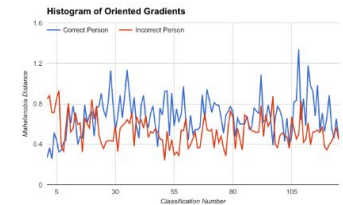
redshirt	blueshirt	lightshirt
darkshirt	greenshirt	nocoats
notlightdarkjeanscolour	darkbottoms	lightbottoms
hassatchel	barelegs	shorts
jeans	male	skirt
patterned	midhair	darkhair
bald	hashandbagcarrierbag	hasbackpack



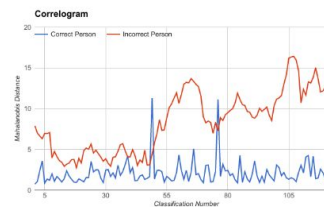
(a)



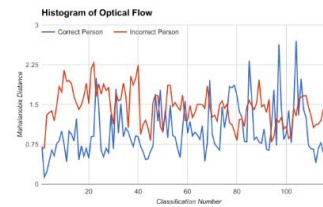
(b)



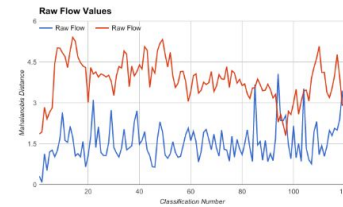
(c)



(d)



(e)



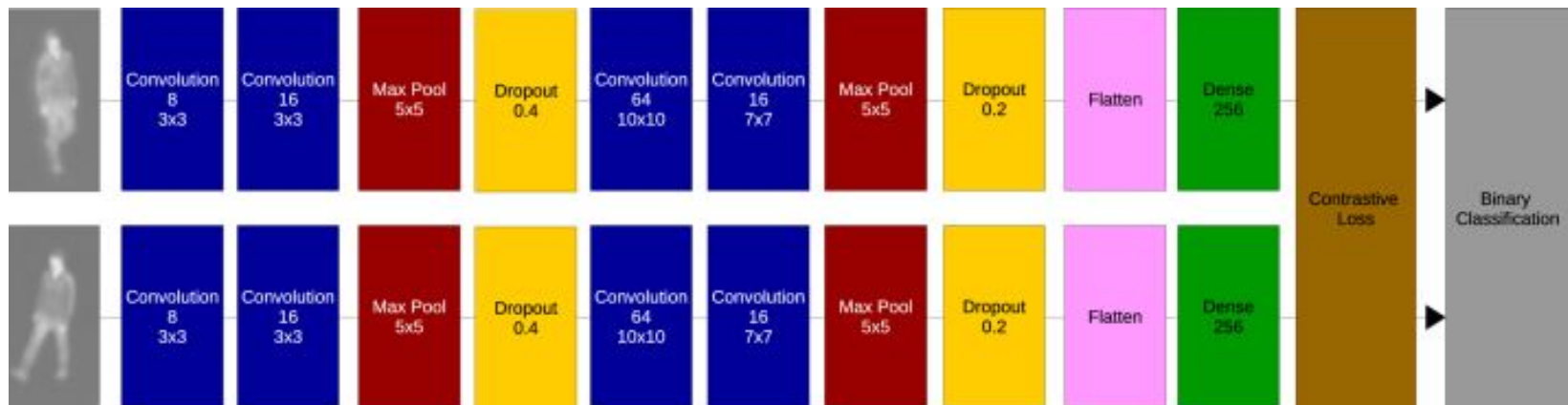
(f)

# Deliverables

1. **Develop a real time person detection system using track-learn-detect (TLD)**
2. **Create a deep siamese convolutional neural network for thermal re-identification**
3. **Combine these into a full re-identification system on videos.**

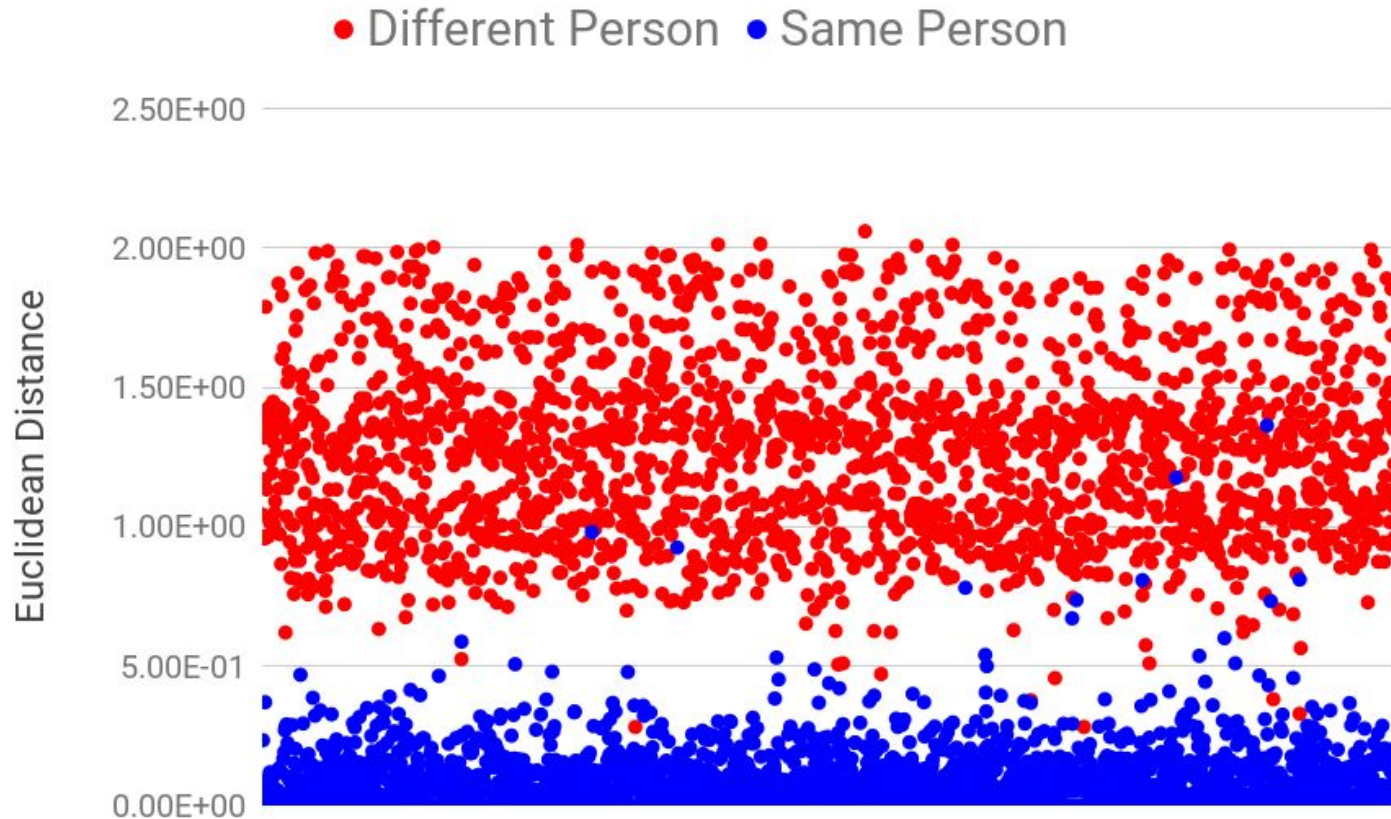
**All Achieved**

# Network Architecture





# Euclidean Distance Results



# Classifications



(a) 0.08 (TP)



(b) 0.12 (TP)



(e) 0.51 (FN)



(f) 0.69 (FN)



(c) 0.38 (FP)



(d) 0.49 (FP)



(g) 0.73 (TN)



(h) 0.96 (TN)



# Other Dataset Errors

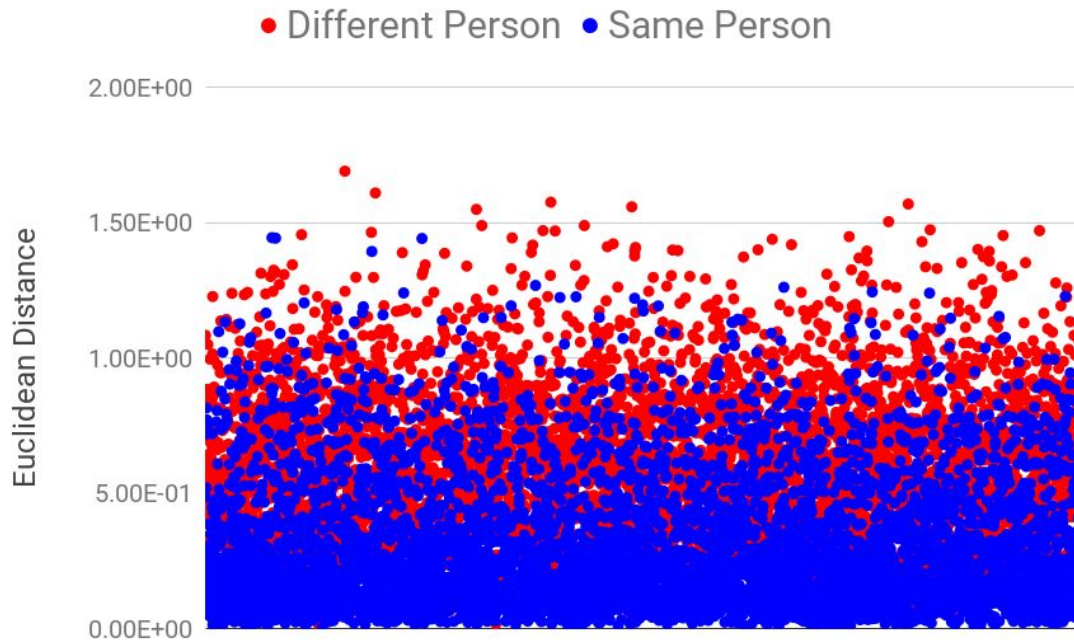


Figure 13: Image pairs and their Euclidean distances

# Demonstrations

Single Camera

Multiple Cameras

<https://www.youtube.com/playlist?list=PLg1kfcNh1OXTFI6BIAbg0fCYrdPlKS0qC>

# Person Detection Issues



(a)



(b)



(c)



(d)