

PROJECT BACKGROUND

- The City of Portland Smart City PDX initiative works to increase traffic safety through data collection.
- Traffic cameras collect data on traffic and pedestrian patterns.
- The data will be used to inform legislative, construction, and traffic decisions including traffic-light timing.
- The main problem is in storing the data since the footage has information on the pedestrians' identities.
- The Pedestrian Tracking and Privacy Preservation preserves important data while preserving pedestrian privacy.



Figure 1: Detection & Obfuscation of Face

Masters, Megan. "GreatScott_April27_300." *Great Scott! Counting Down The Office's Top 32 Most Memorable Michael Moments*, 2011, pmctvline2.files.wordpress.com/2011/04/greatscott_april27_300110427100210.j pg.

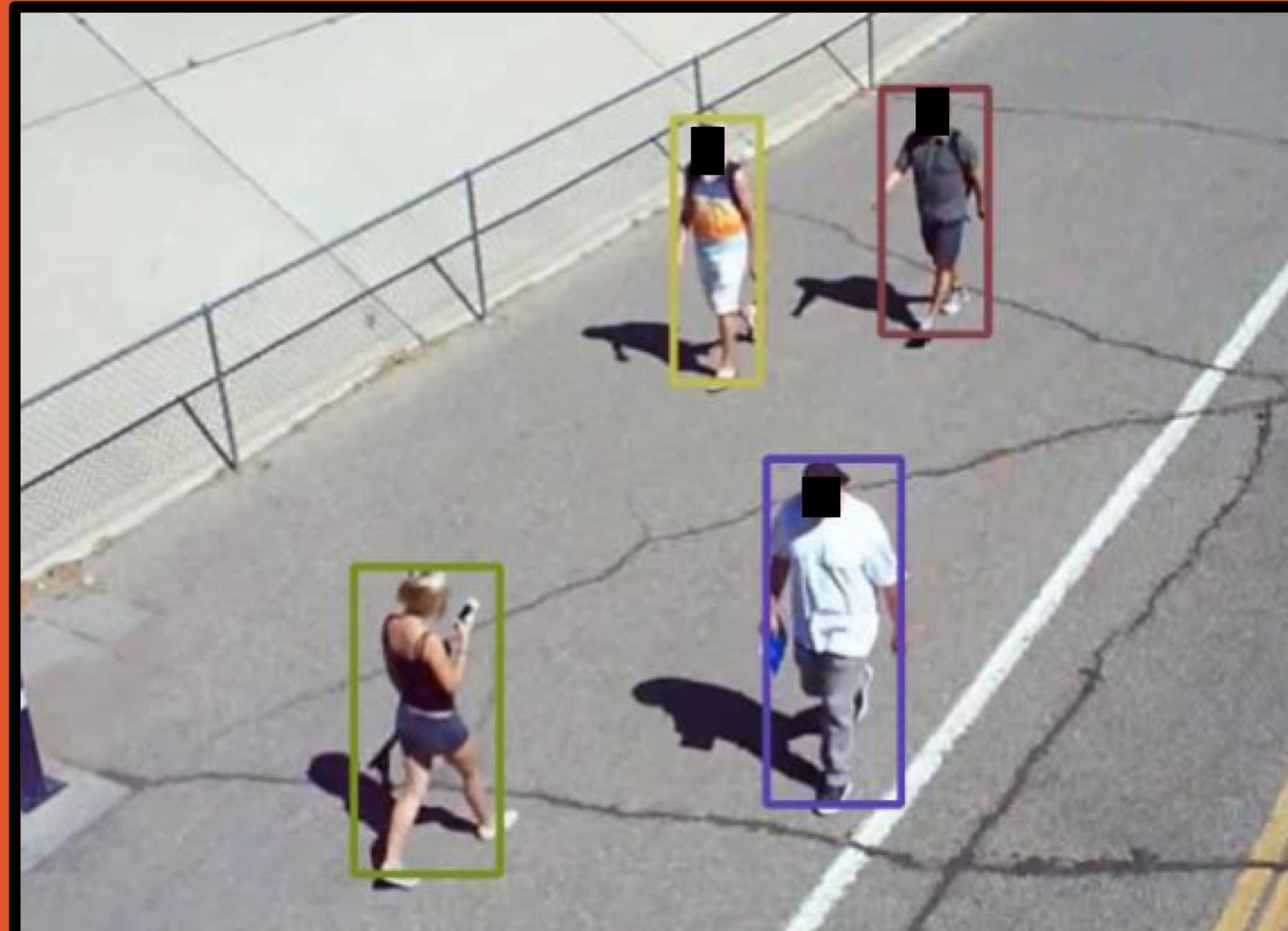


Figure 2: Applied Face Obfuscation on Surveillance Footage After Pedestrians Detection

PEDESTRIAN TRACKING AND PRIVACY PRESERVATION

"All I remember about data collection was the dementors" - Prison Mike



Figure 3: Applied Car Detection on City of Portland Dataset



Figure 5: Applied Car Detection on AI City Challenge Dataset

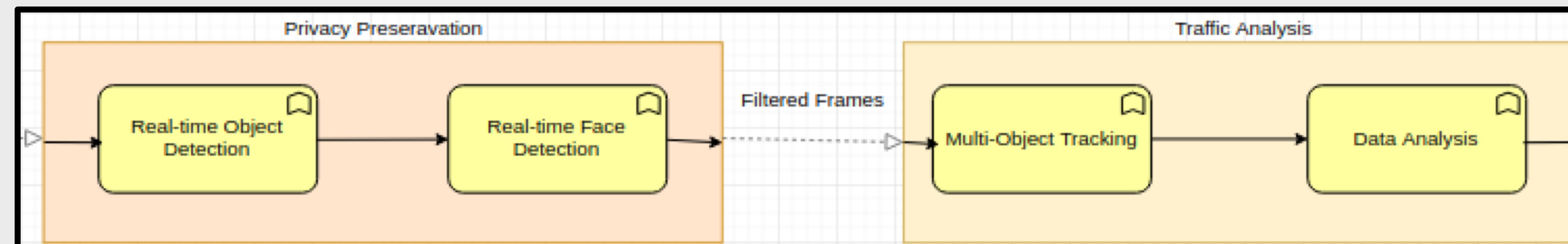


Figure 4: Computer Vision Pipeline

PRIVACY PRESERVATION

- While data collection is by necessity an invasive process, our project is concerned with extracting only information that meets the immediate needs of the City of Portland.
- To this end, developing a way to quickly identify (and obfuscate) identifying features is paramount to any fully realized solution.
- This will allow us to create a product which enables the City of Portland to make informed decisions on any urban projects while simultaneously respecting the needs of its citizens.

TRAFFIC ANALYSIS

- Data analysis and access is a key subsystem in fulfilling the end goal presented to our group by the City of Portland.
- The main purpose of this system is to provide the City with reasonable access to the data provided by sensors around the city, after stripping all personally identifying information, and to make the data provided more intelligible by parsing the video or photographic information gathered into a serialized format.
- This formatted data will allow the City to make decisions about the roadways and traffic with greater speed and accuracy.

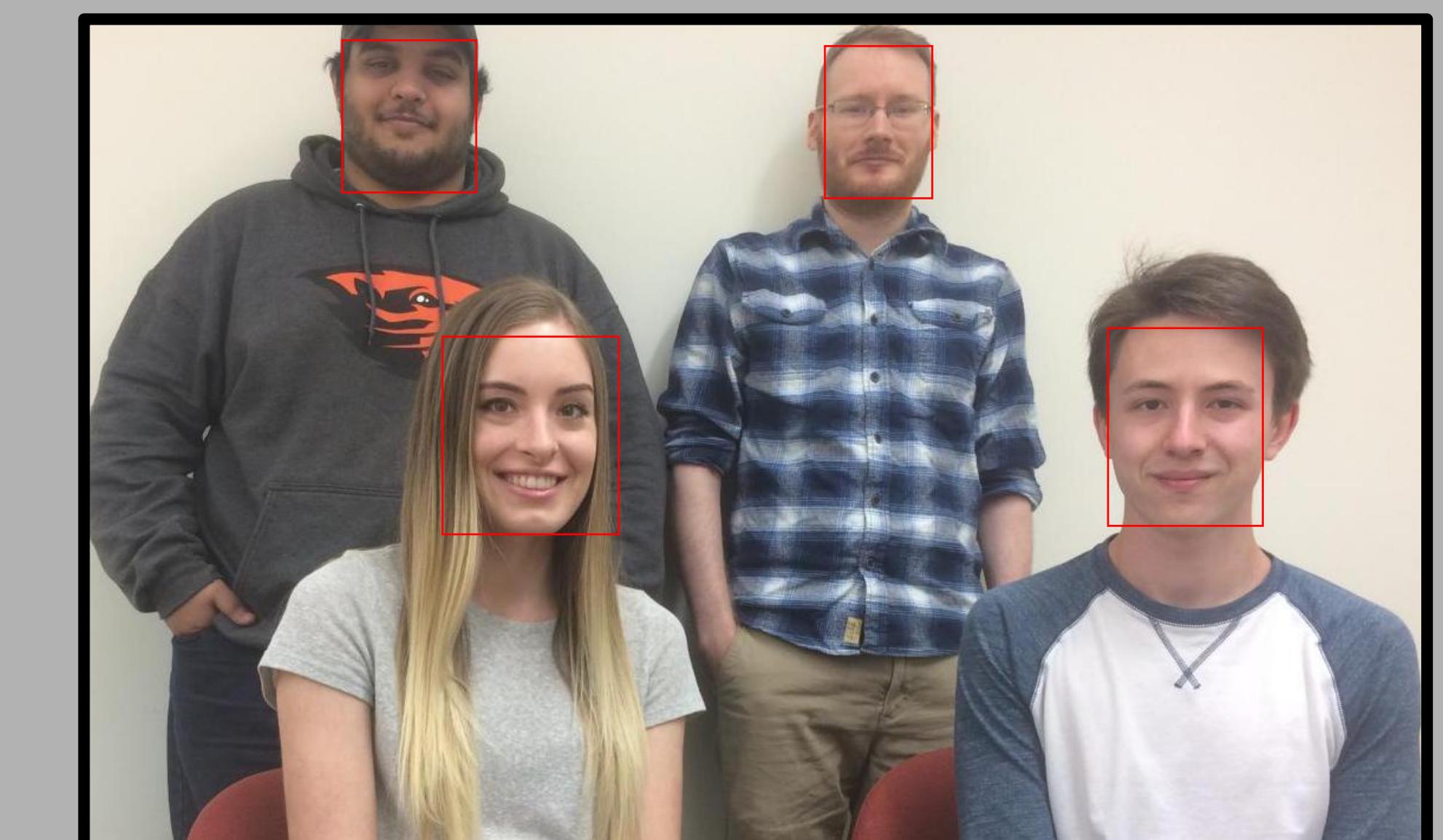
PROJECT DESCRIPTION

- Our project is split into four different components: real-time object detection, face detection, object tracking, and data access
- The real-time object detection system detects pedestrians from a given video feed.
- Face detection identifies and obfuscates faces given the coordinates of detected faces.
- The object tracking system extracts interesting metrics such as velocity and aggregate counts from processed footage.
- The data access component that involves an online API for both storing and accessing the data collected to a database owned by the City of Portland.

SPONSORS & TEAM MEMBERS

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