PEDESTRIAN IN TRAFFIC

Data Drivers & NSDC

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Our Team

Data Drivers

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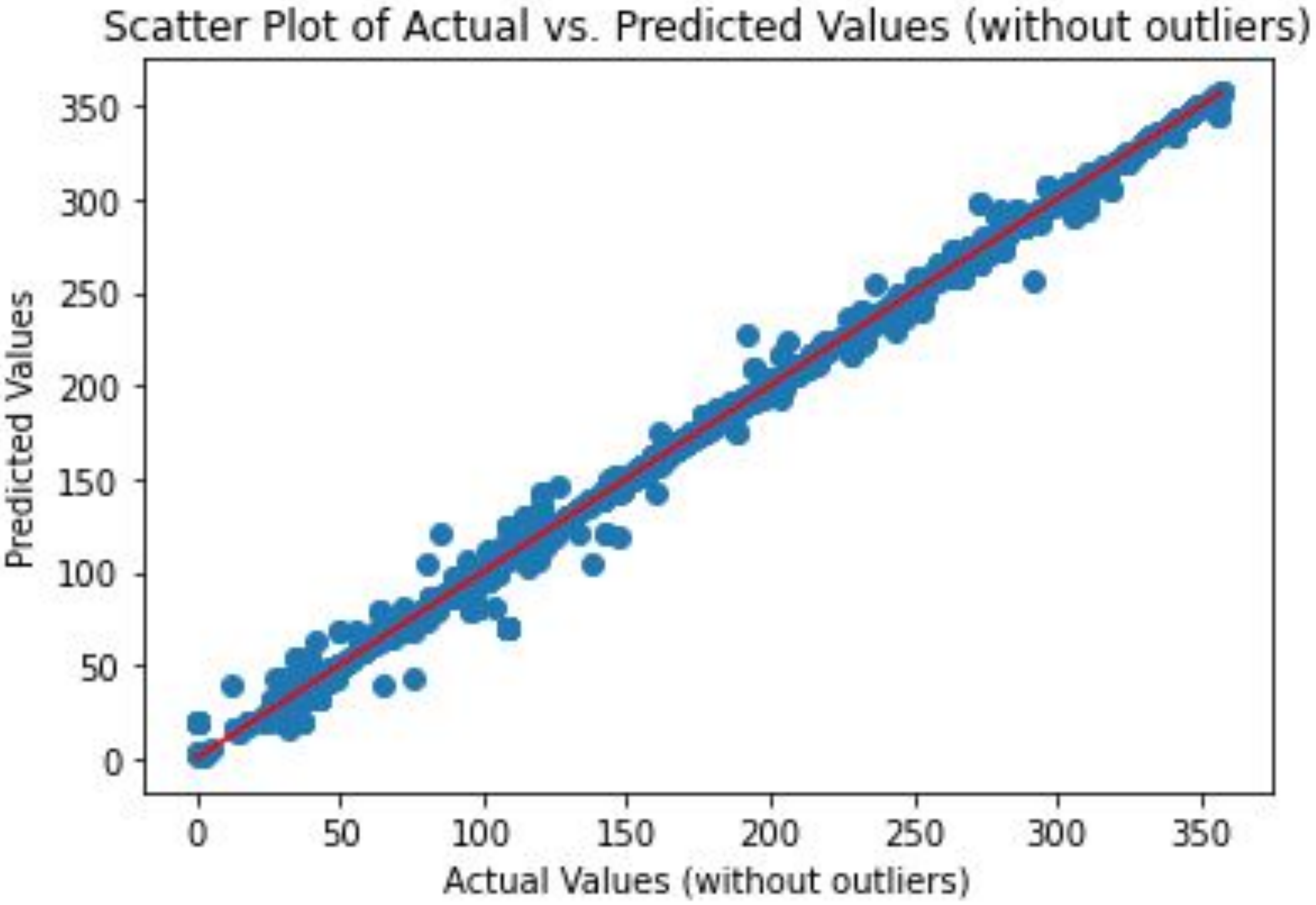
ABOUT THE DATA

- Multi-agent Pedestrian Tracking (UCI Machine Learning Repository)
  - Multivariate, Sequential, Time-Series
  - 4760 observations x 14 attributes
  - Recorded from a vehicle in southern Germany
- **Our Research Question:** How does the presence & movement of other agents affect the head angle of pedestrians in a given scene?
- Label: head_yaw: yaw head angle in degrees (float)
- Suggested Applications: Autonomous driving, traffic management, urban planning, multi-agent motion prediction

CLEANING THE DATA

- Removal of missing data values for body & head angles
- Exploding coordinate lists for roll, pitch, & yaw for both body & head
- Visualizations of color-coded map with agent information
  - 2D & 3D Scatterplots
  - Heatmaps
  - Box plots
- Feature engineering using polynomial and multivariate regression
  - Linear & logistic regression

OUR PROGRESS



Mean Squared Error (original model): 164.56

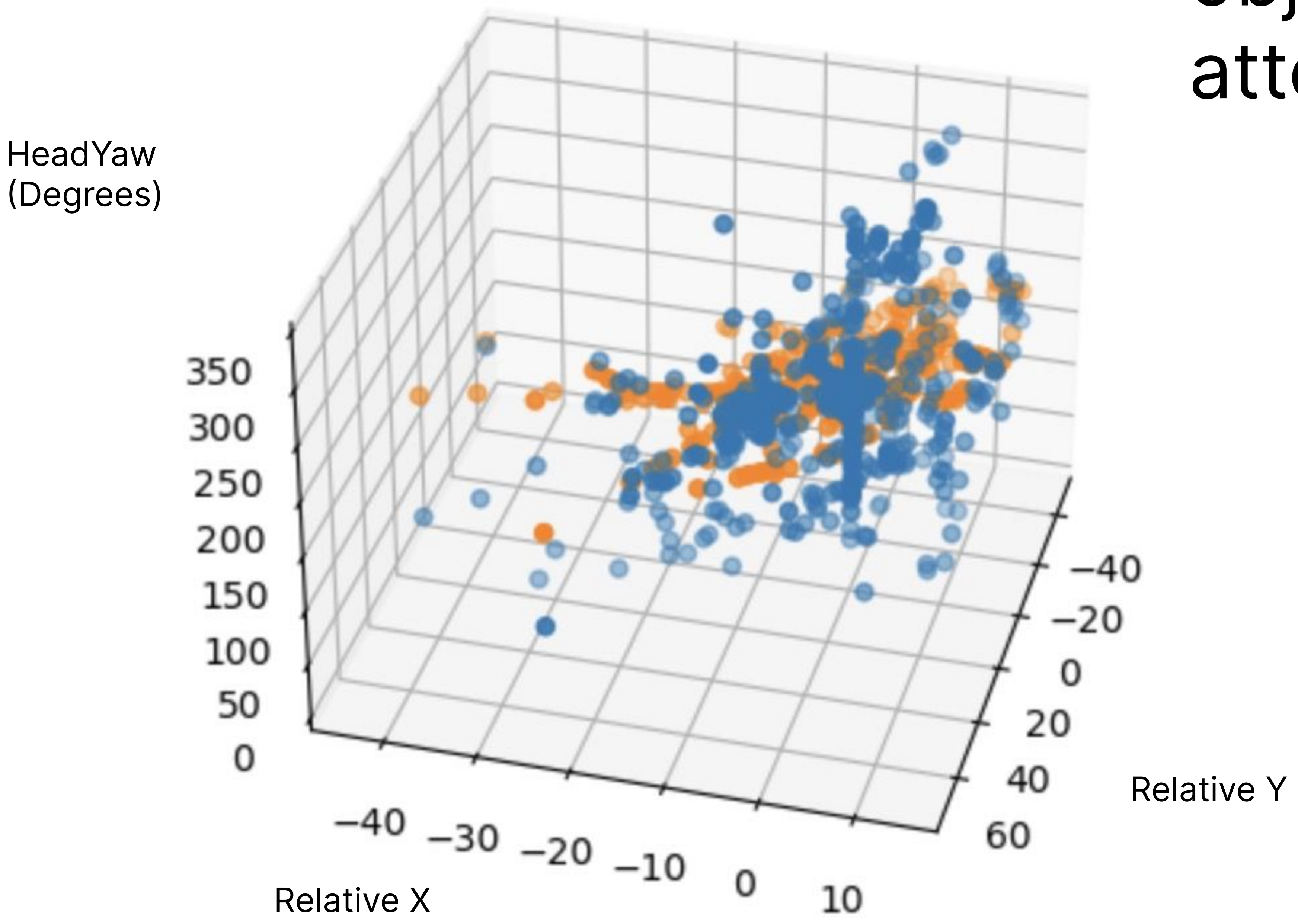
Mean Squared Error (no outliers): 18.67

R Squared (original): 97%

R Squared (no outliers): 99.7%

Anthony Chen

P values for models created using different classes to determine which object were most likely to grab the attention of the pedestrian



-0.19504917(relative_x) - 0.13526806(relative_y) = headyaw

EGO CAR

```
rel_x            4.360604e-15
rel_y            1.176505e-32
other_class               NaN
headyaw          0.000000e+00
Name: P>|t|, dtype: float64
```

CAR

```
rel_x            0.822146
rel_y            0.000004
other_class      0.920038
headyaw          0.000000
Name: P>|t|, dtype: float64
```

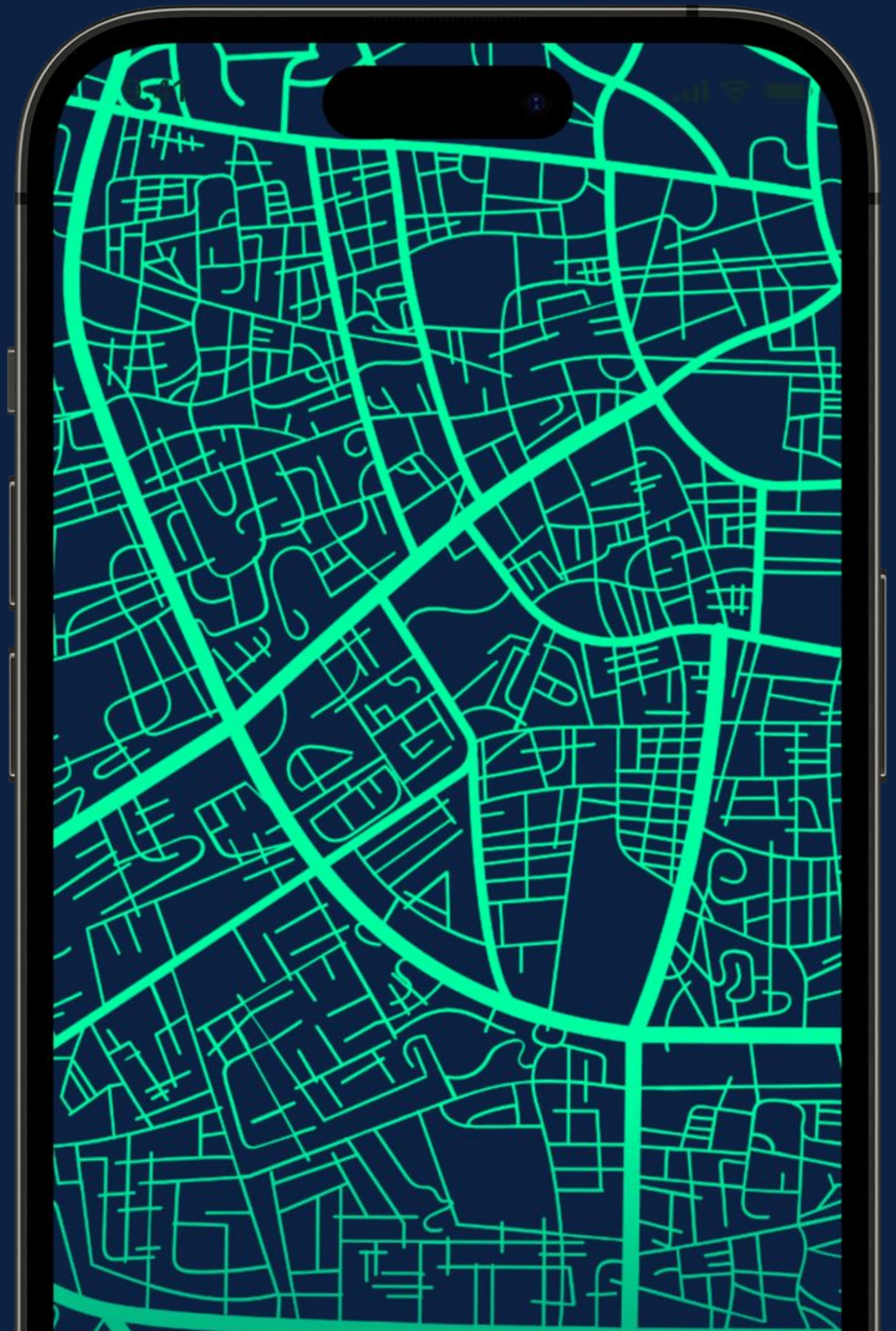
PEDESTRIAN

```
rel_x            1.000000
rel_y            0.000466
other_class      0.004170
headyaw          0.000000
Name: P>|t|, dtype: float64
```

CONCLUSIONS

- **Conclusion:**
  - Head angle linked to x-y positions
  - High correlation, low R-squared for head angle vs. closest object's position
  - Egocars draw most attention, likely due to safety concerns
- **Next Steps:**
  - Enhance data collection with advanced sensors and cameras
  - Raise public awareness about egocars' impact on pedestrians
  - Refine models for improved generalizability

THANK YOU



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