

Automated Car Detection in Parking Lots

Seth Polsley, Tracy Hammond



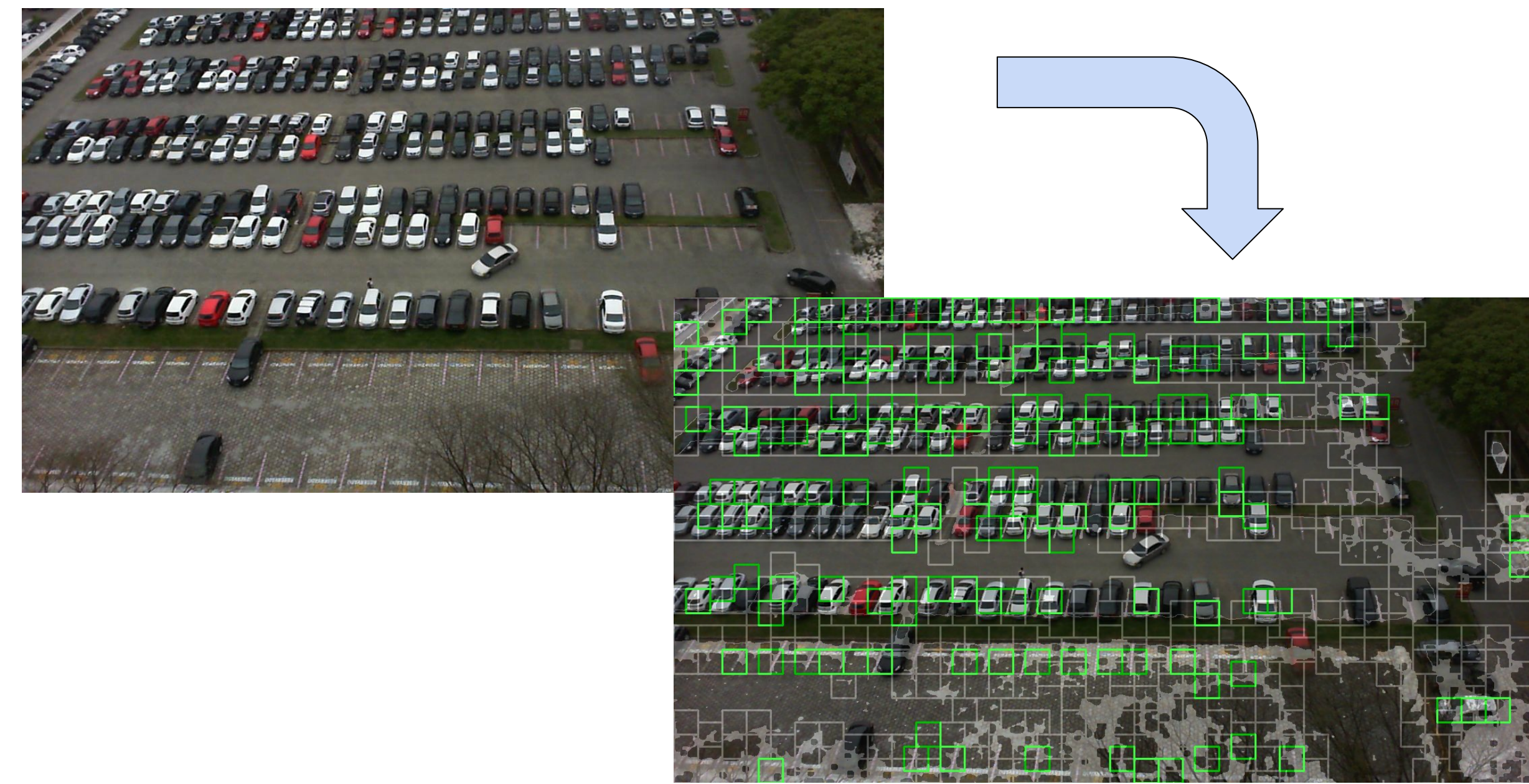
**COMPUTER SCIENCE
& ENGINEERING**
TEXAS A&M UNIVERSITY



SKETCH RECOGNITION LAB
TEXAS A&M UNIVERSITY

Introduction and Background

Software to help find parking more quickly, easily, and efficiently has multiple benefits in terms of energy and time conservation. Commercial solutions are sensor-based, but include drawbacks in terms of installation and maintenance costs, as do some computer vision approaches.



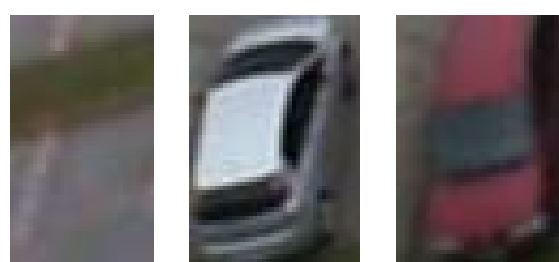
Methodology

We combine two aspects for a more complete solution -- a pure vision and machine learning approach for identifying cars, and a heuristic-based approach to make use of existing knowledge.

Learning Methods

- Pixel-based
 - Color, texture, etc.
 - Finds non-car spots

	C	NC
C	64.4%	35.6%
NC	19.3%	80.7%



- Feature-based
 - SURF and SIFT
 - Finds car spots

	C	NC
C	93.6%	6.4%
NC	43.1%	56.9%

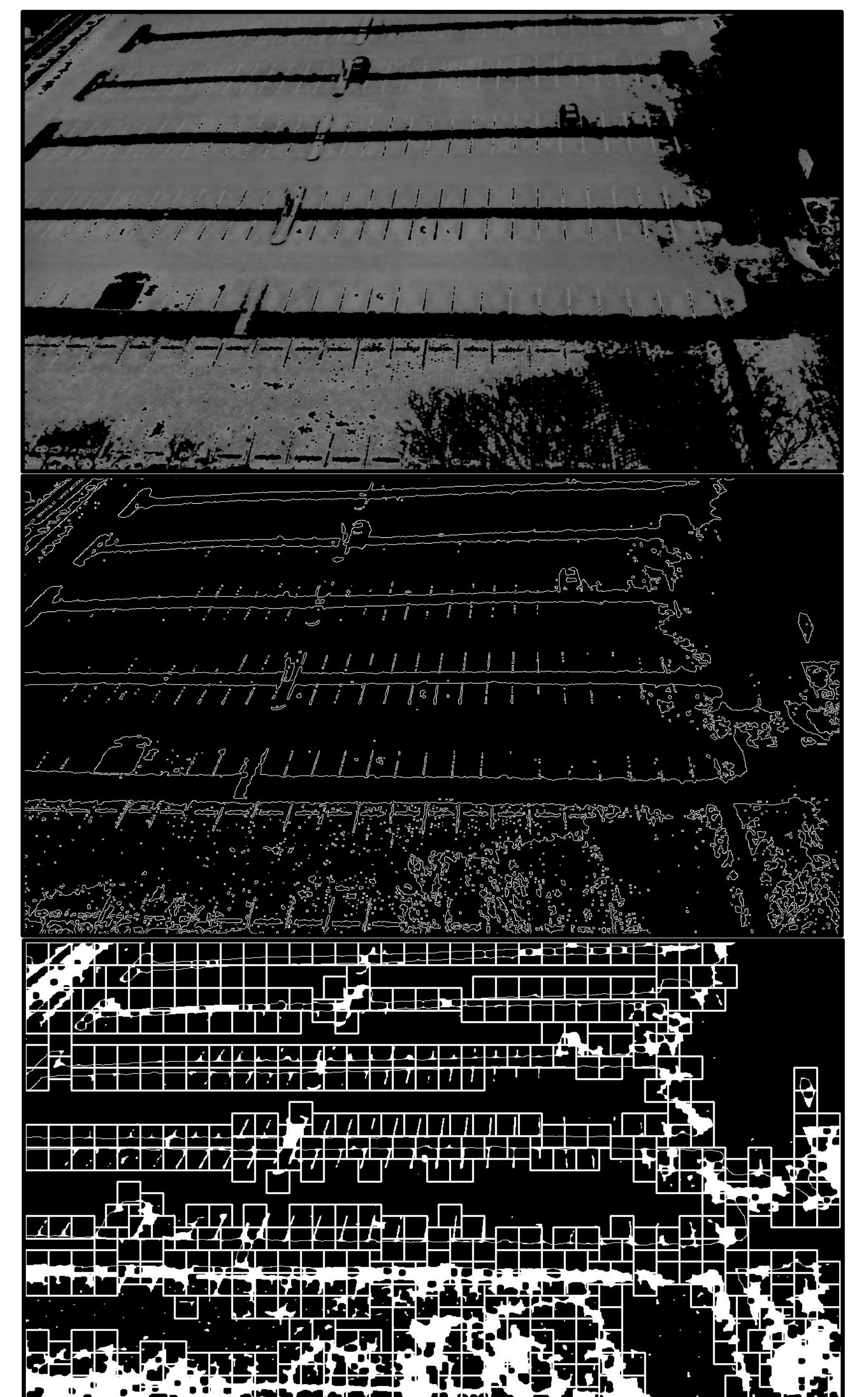


- Combine



Heuristics

- Ground, Edge, and Space detect



Conclusion

Using some fairly basic algorithms with this combined knowledge approach, we have developed a promising method for automatic parking lot analysis using only cameras.