

A Space-Based Solution to Improve Roadway Safety and Efficiency in Virginia:
Real-time Winter Weather Data for Navigation
(Technical Report)

Free Parking or Livable Cities? An Urban Planning Controversy
(STS Research Paper)

An Undergraduate Thesis Portfolio
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Bachelor of Science in Aerospace Engineering

by

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Preface

How can American surface transportation systems be improved in terms of efficiency and sustainability?

How can drivers be informed during commutes of weather information necessary for safe and efficient driving? Adverse weather such as precipitation makes roads hazardous, worsening congestion on Virginia's already congested roads. State-of-the-art systems cannot effectively deliver real-time weather data to drivers. The capstone design group developed a conceptual design for a Cube Sat spacecraft with road imaging capabilities and an effective data stream that delivers said information to motorists, first responders, and roadway managers. Future groups will use this plan to construct and launch said spacecraft into orbit.

In the U.S., how are critics of local zoning ordinances that subsidize driving advancing their agendas? To their critics, such laws are wasteful, promote urban sprawl, and perpetuate car dependency. They favor granting local officials the discretion they need to pursue livability, sustainability, and social equity. Ranging from pedestrians to small town developers, they contend financial instability comes from prioritizing cars over humans. Favoring bottoms-up reform, these groups seek to teach Americans the merits of people-centric urban planning.

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