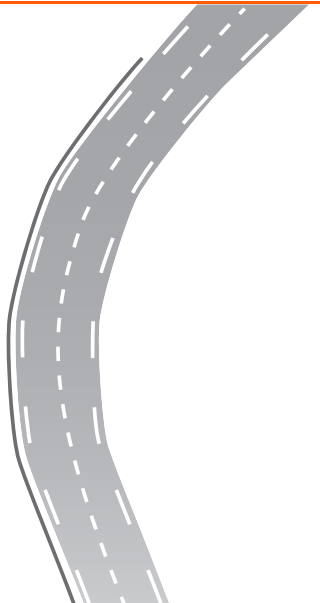
Course introduction

Sensor fusion & nonlinear filtering

Lars Hammarstrand

Sensor fusion and (nonlinear) filtering

- Use a sequence of noisy observations from one or more sensors to better estimate some unknown quantity of interest (state) and associated uncertainty measures at the current time instance.



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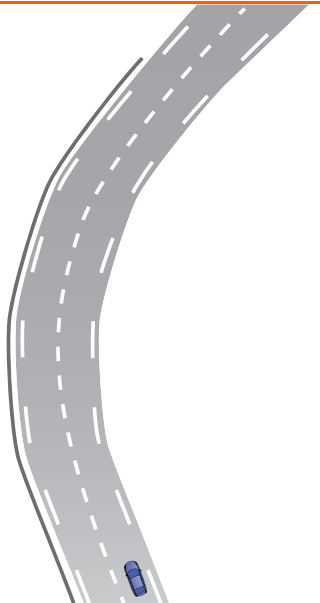

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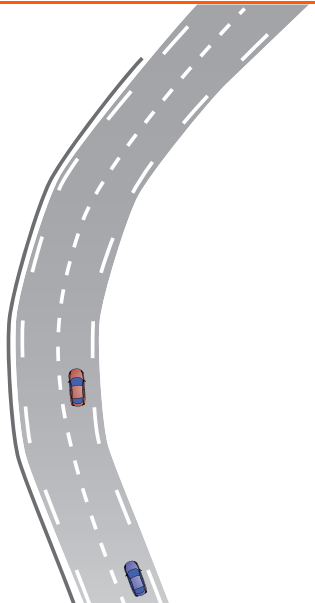

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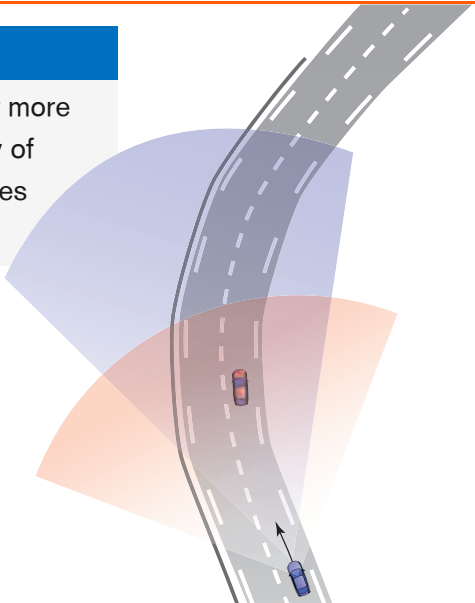

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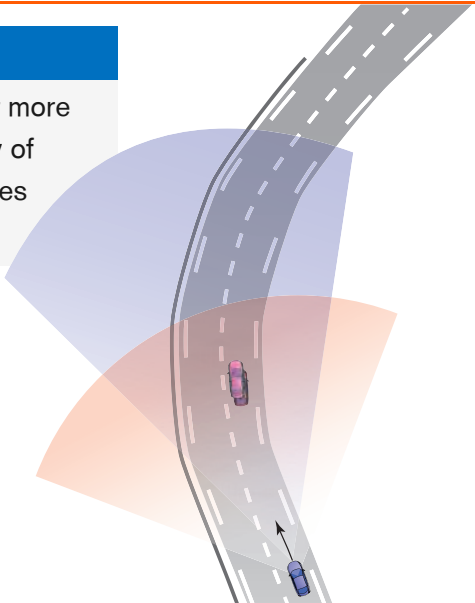

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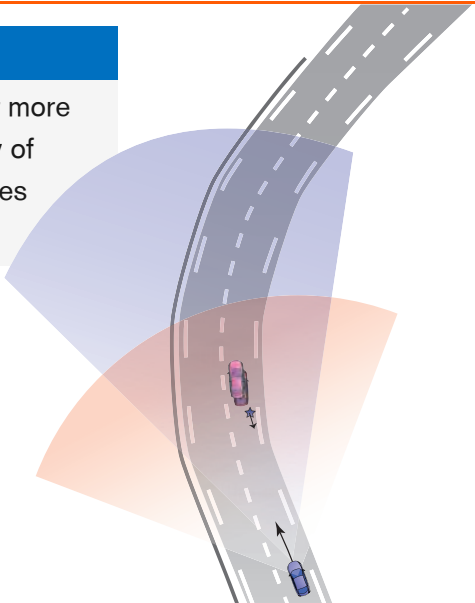

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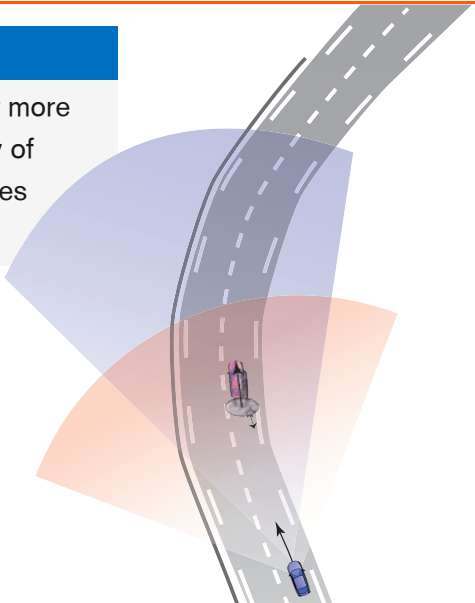

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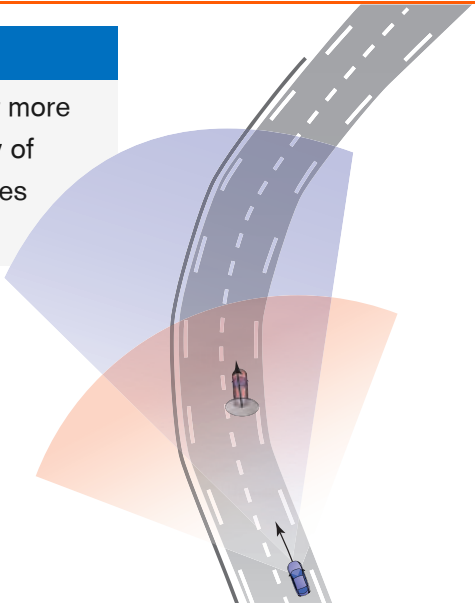

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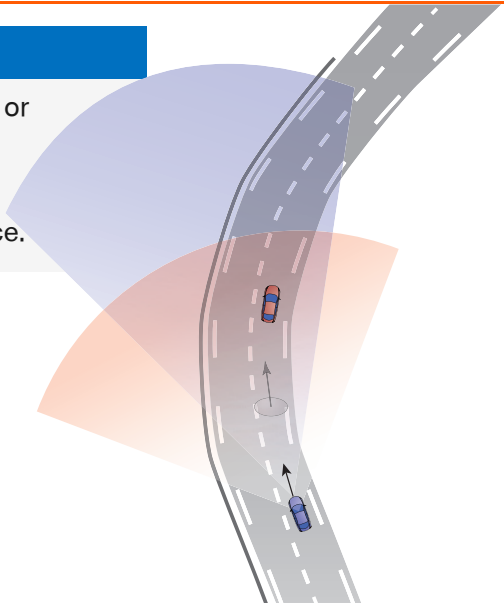

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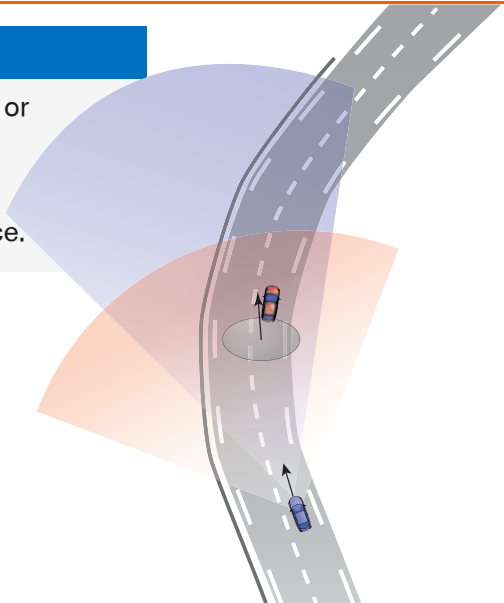

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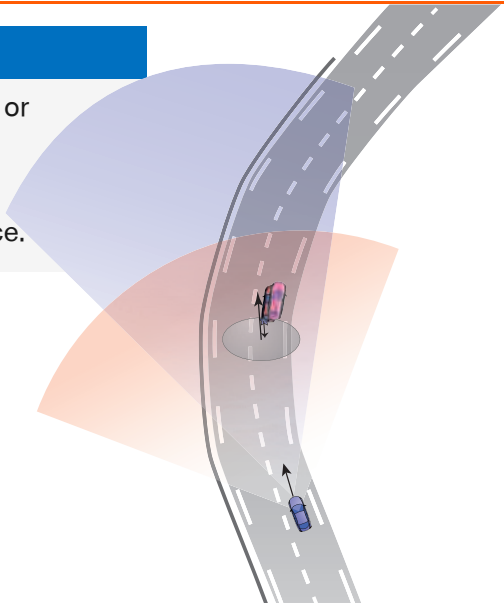

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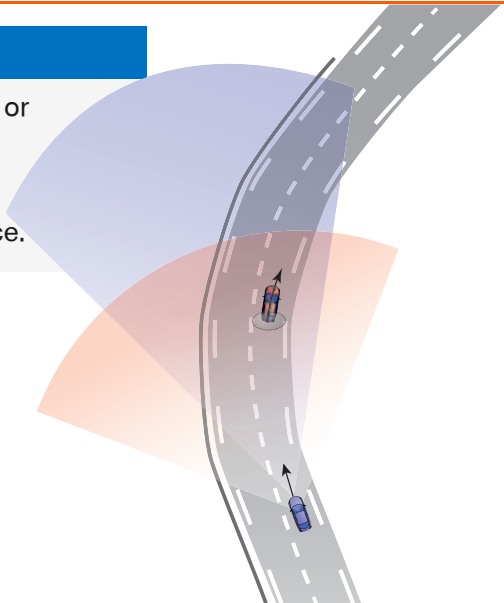

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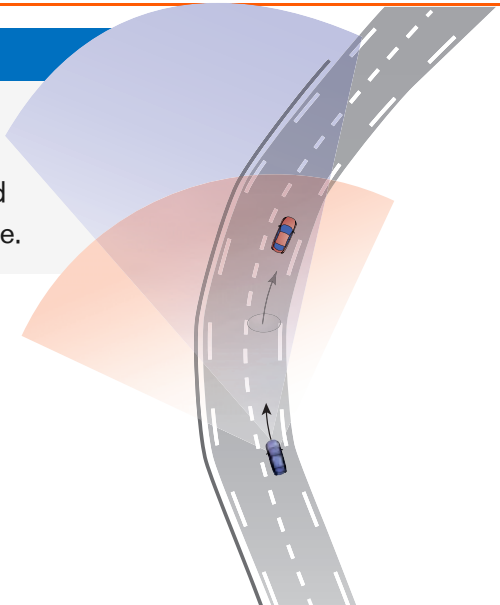

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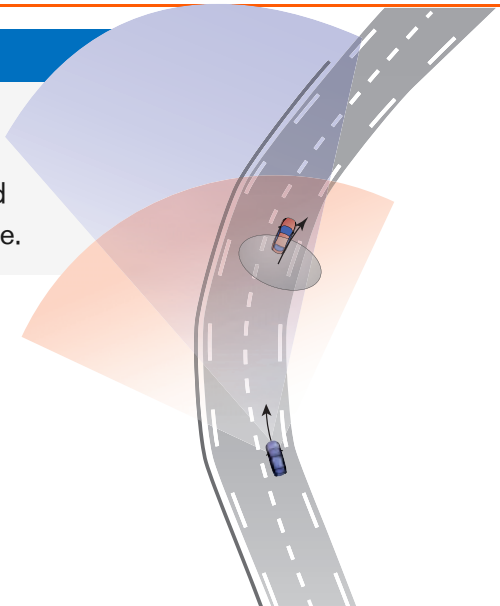

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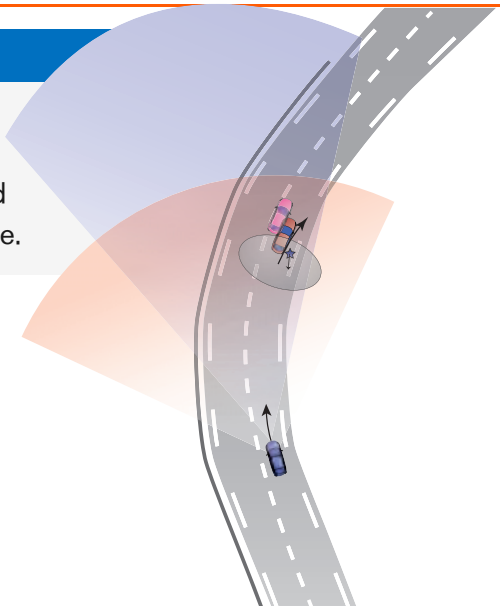

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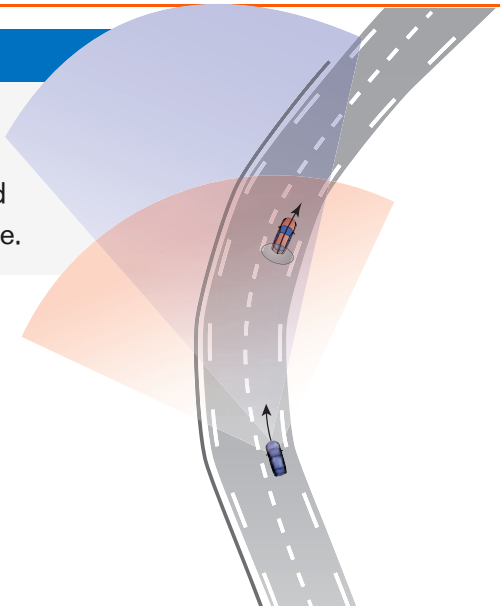

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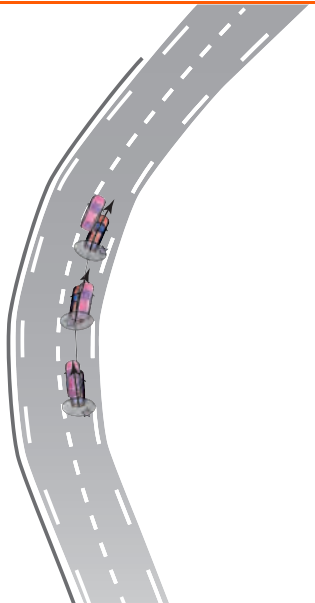

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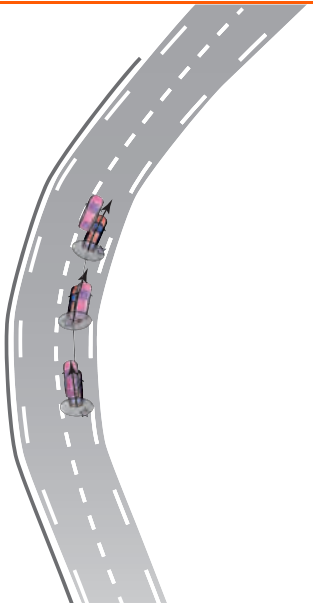
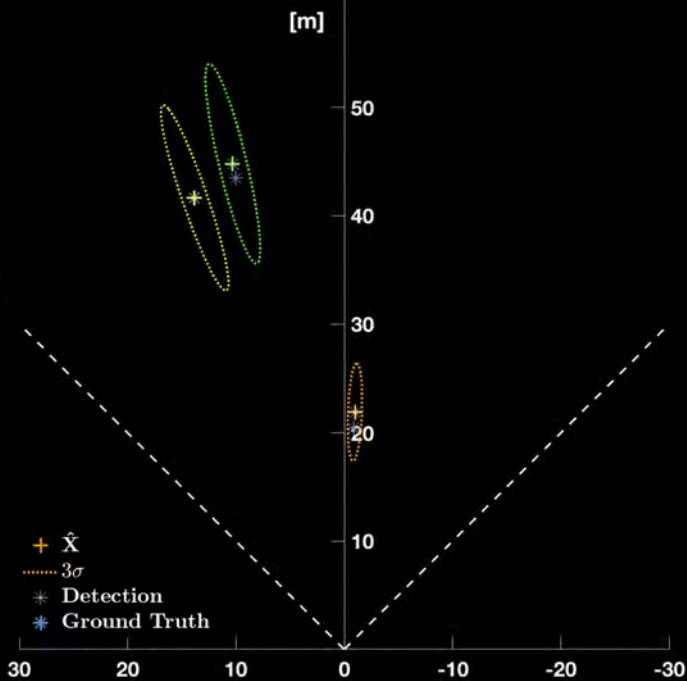
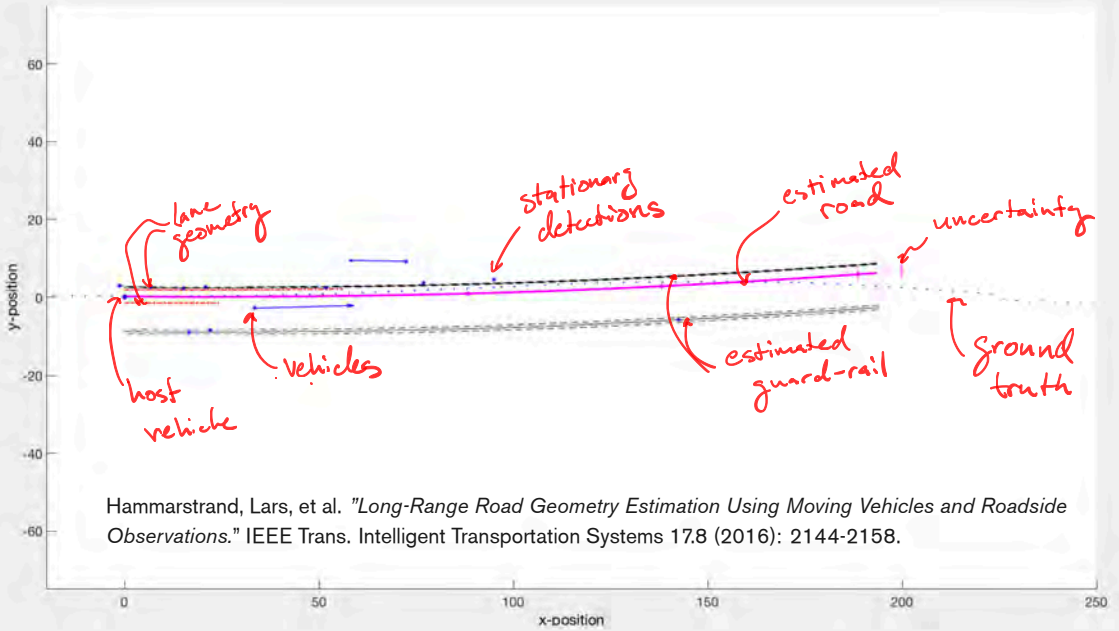
Note:

- In this course we will not consider the data association problem or handle multiple objects
- Although we will mainly give examples related to automotive applications, the theory and methods learned in this course are much more general than that!





Scheidegger, Samuel, et al., *"Mono-Camera 3D Multi-Object Tracking Using Deep Learning Detections and PMBM Filtering"*. IV 2018, China, June 26-30, 2018



Hammarstrand, Lars, et al. *"Long-Range Road Geometry Estimation Using Moving Vehicles and Roadside Observations."* IEEE Trans. Intelligent Transportation Systems 17.8 (2016): 2144-2158.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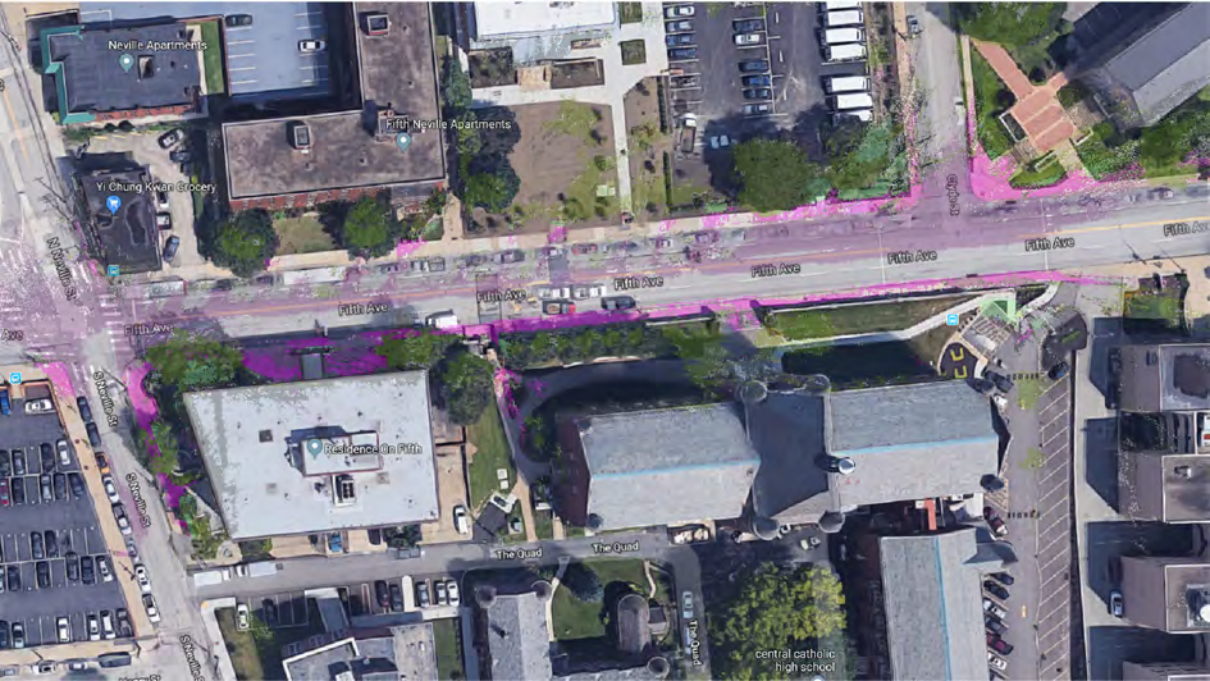
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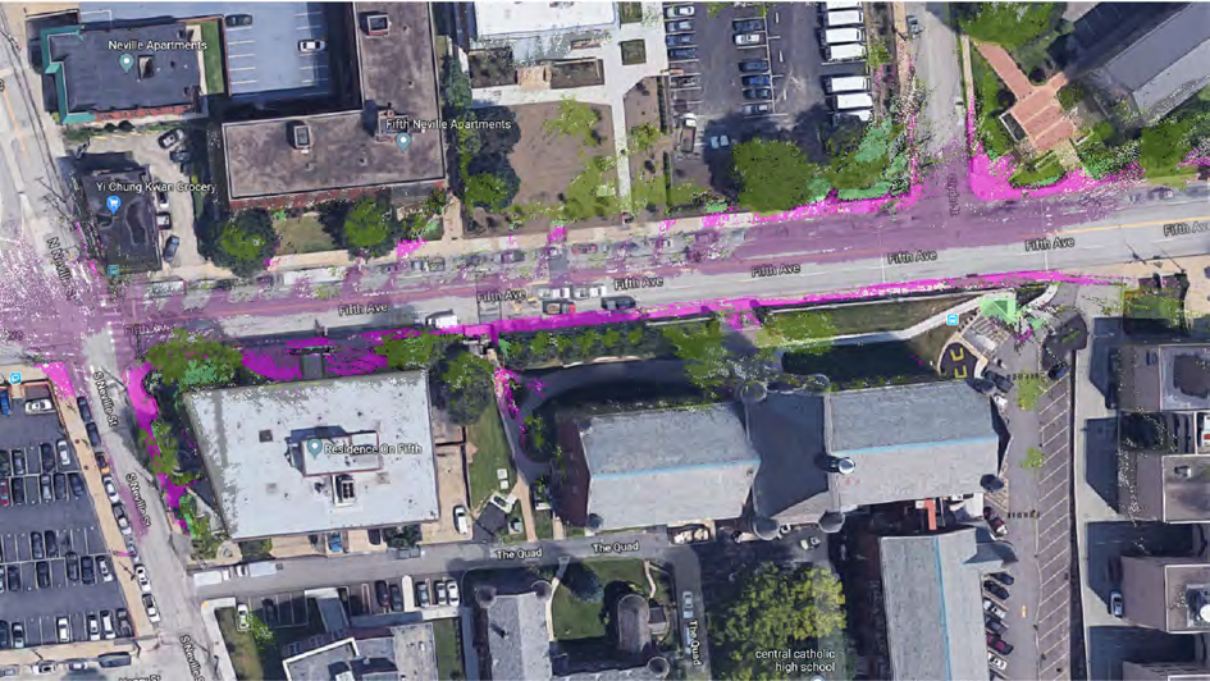
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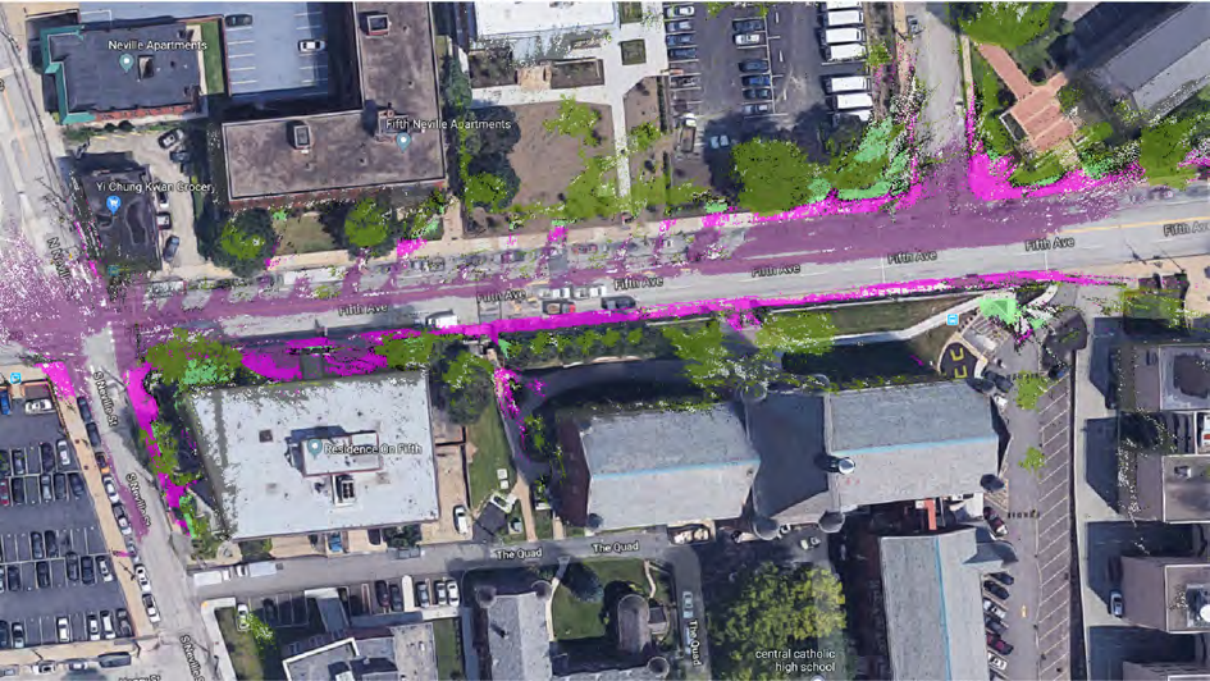
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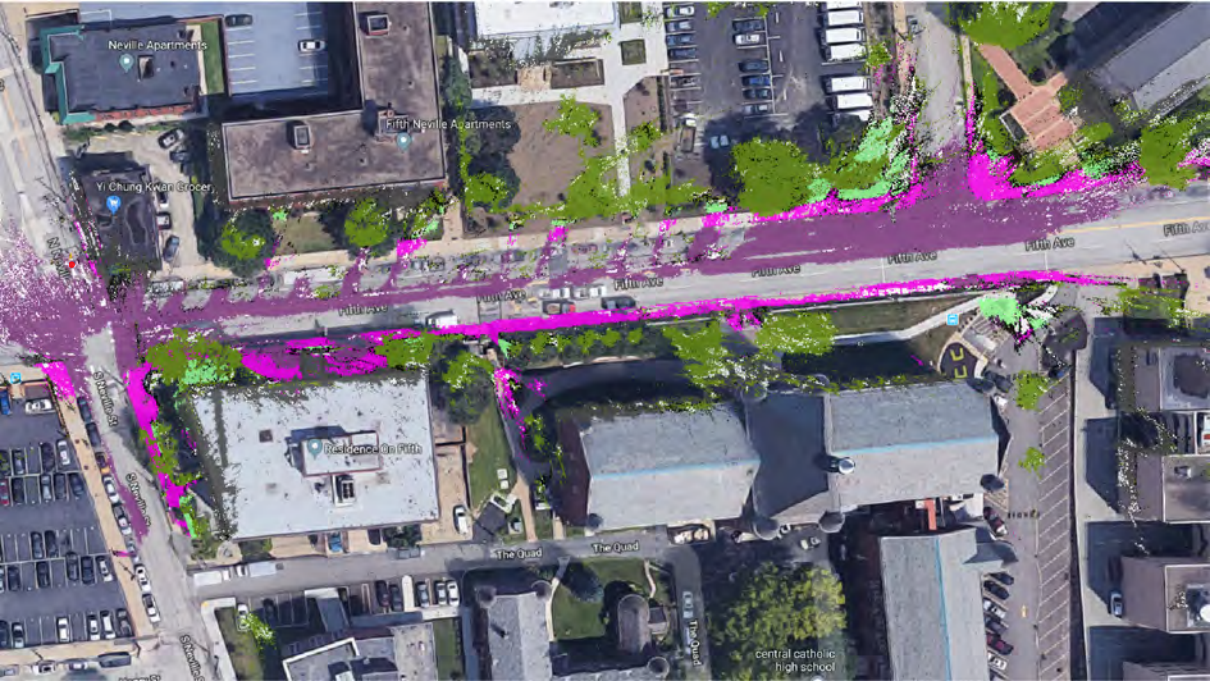
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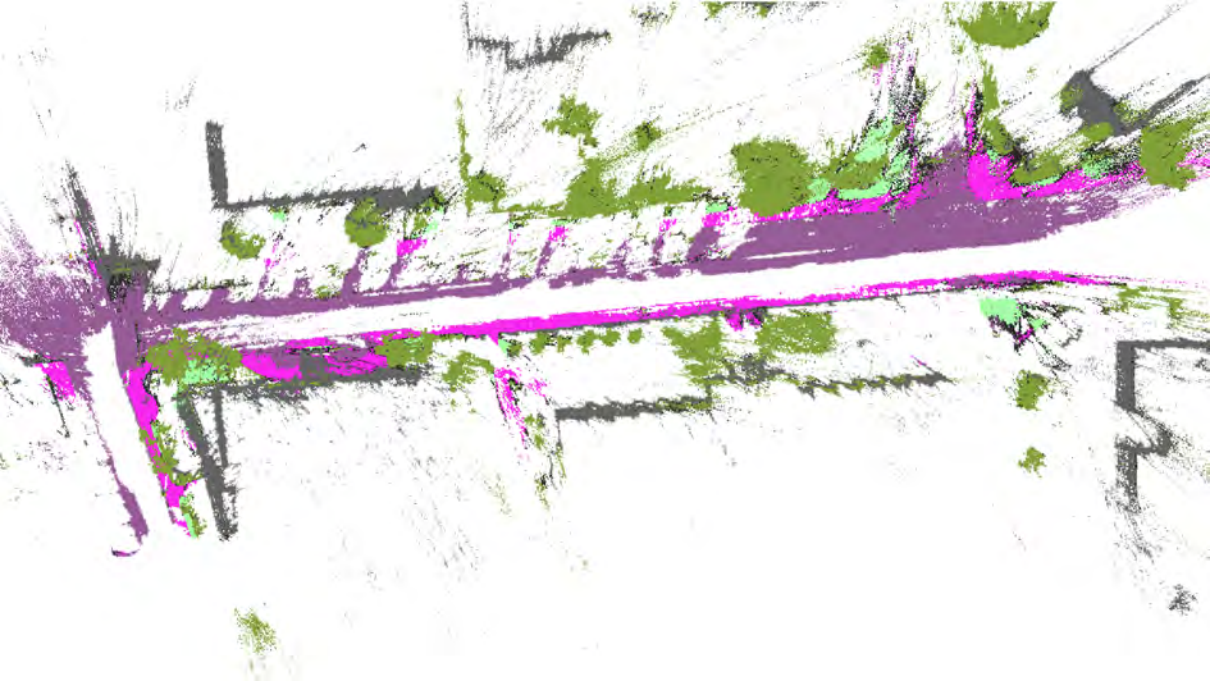

LECTURE CONTENTS AND LEARNING OBJECTIVES

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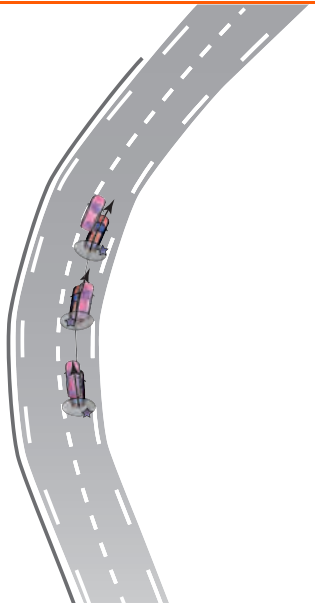

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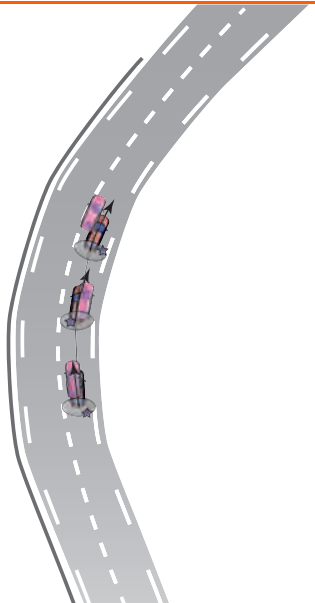

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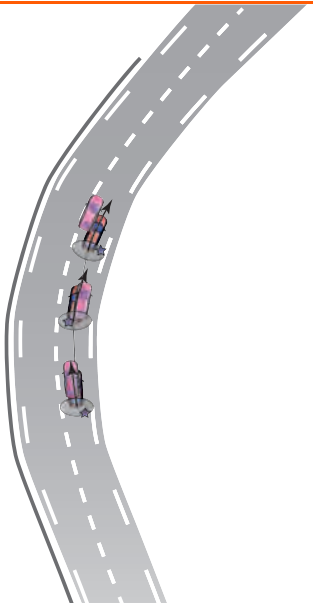

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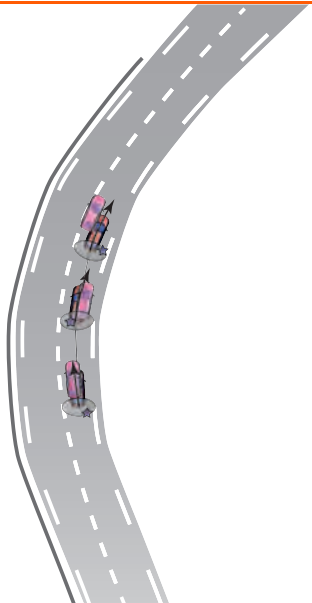

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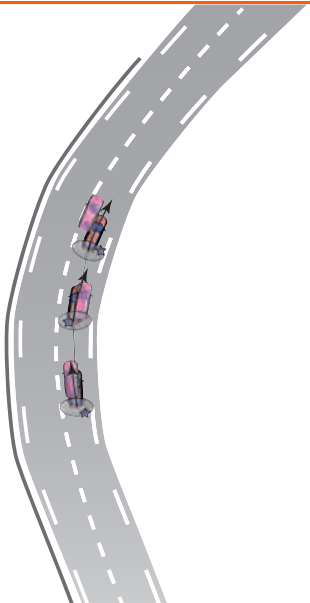

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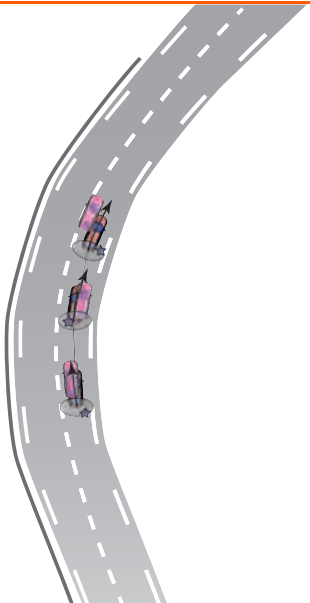

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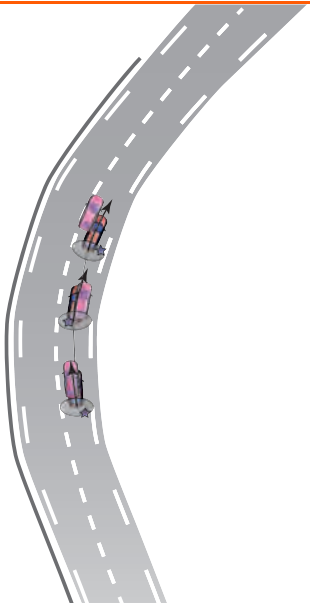

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