Phase 3 Outline

1. Introduction
   1. Problem Statement
   2. Objective
   3. Scope
2. Background
   1. Summary from Phase 2: Lame Boundary Module
3. Vehicle Dynamics
   1. Coordinate Systems
      1. Serret-Frenet Frames
   2. Acceleration Limits
      1. Tire Limits
   3. Ackerman’s Angle
4. Road Design
   1. AASHTO Standards
      1. Road Design
      2. Friction Considerations
5. Data Sampling
   1. Surveying
   2. Lidar
   3. Satellite scans
   4. GPS
6. Method Formulation
   1. Discrete Curvature
   2. Heading Angle
   3. Segment Length
7. Filtering/Smoothing Techniques
   1. Interpolation
   2. Weighted Regressions
8. Road Optimization
   1. Objective Functions
      1. Least Squares-Minimization on Road data
      2. Acceleration Min. on Ackerman’s Steering
      3. Angle Min. on Ackerman’s Steering
   2. Constraints
      1. Vehicle Dynamics
      2. AASHTO Limits
9. Conclusions