

USING EARLY ANALYSIS TO SIMPLIFY LANE TRACKING

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MOTIVATION

- **SELF DRIVING CARS**
- **ALLOWS FOR ADDITIONAL SAFETY**
- **GROWING MARKET IN OUR CURRENT DAY**

IMPLEMENTATION

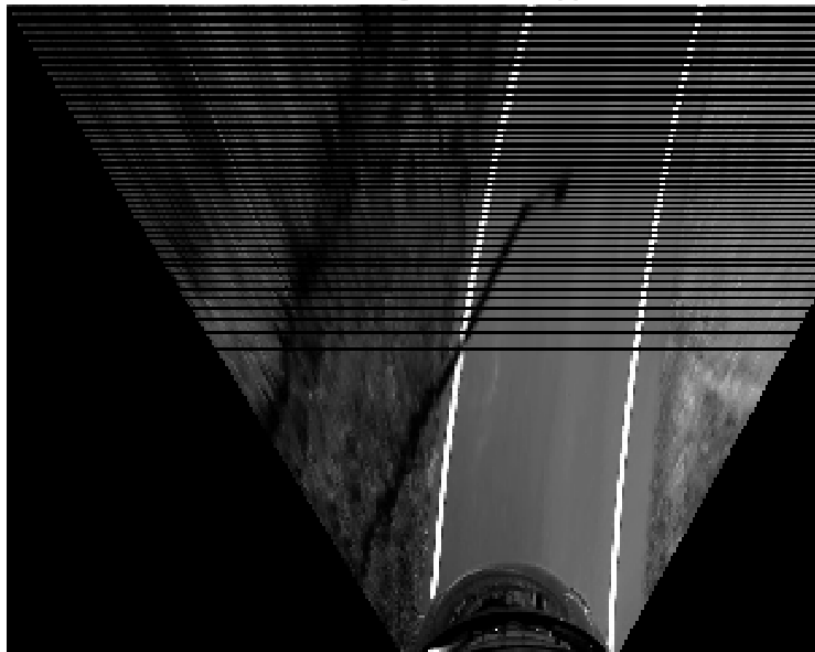
- **STEPS**
 - **INVERSE PERSPECTIVE MAPPING (IPM)**
 - **FILTERING AND THRESHOLDING**
 - **LINE AND SPLINE FITTING (RANSAC)**
 - **SPLINE LOCALIZATION AND EXTENSION**
 - **LANE SELECTION (VERIFICATION)**

IPM, FILTERING AND THRESHOLDING

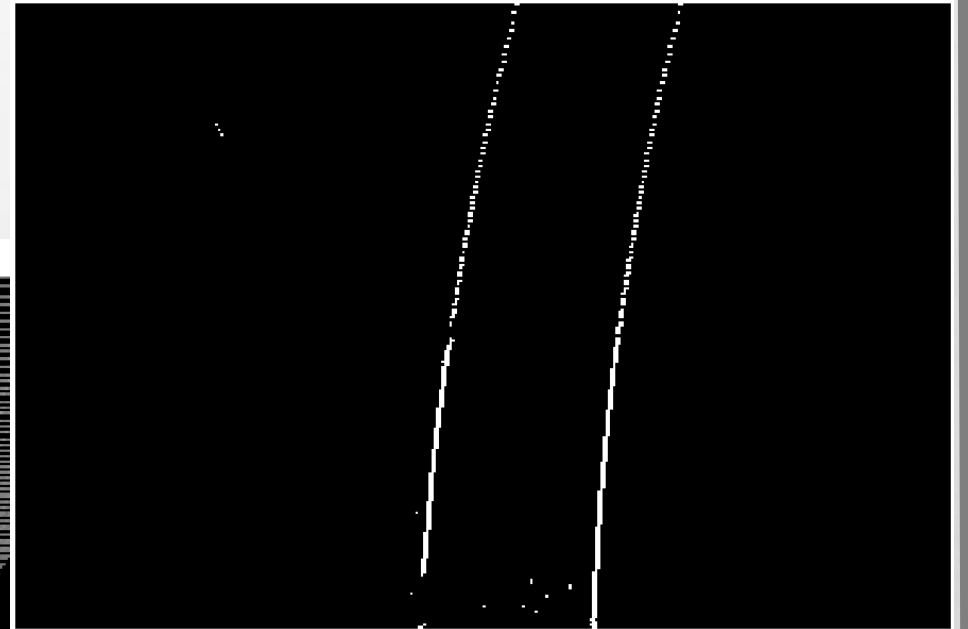
Original Lane Image



Image with IPM applied

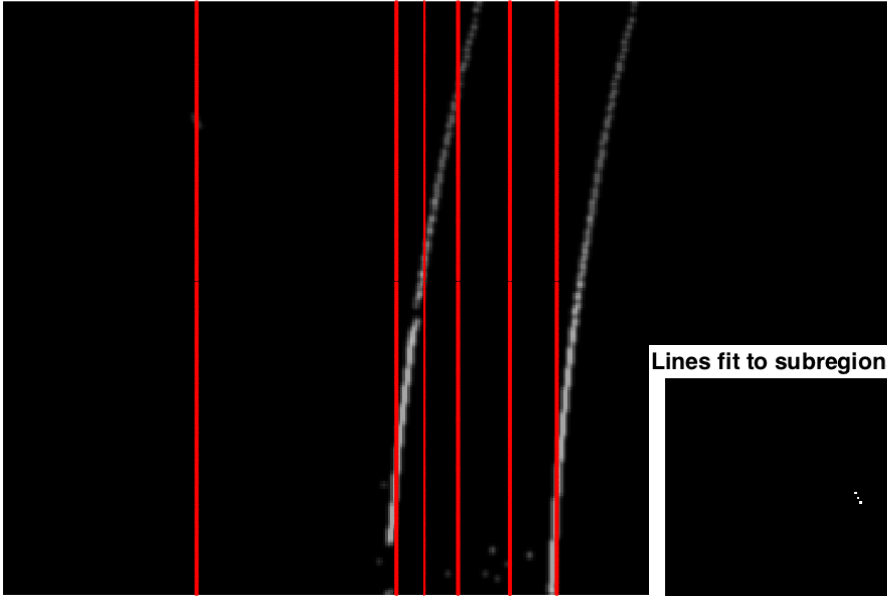


Thresholded and binarized image

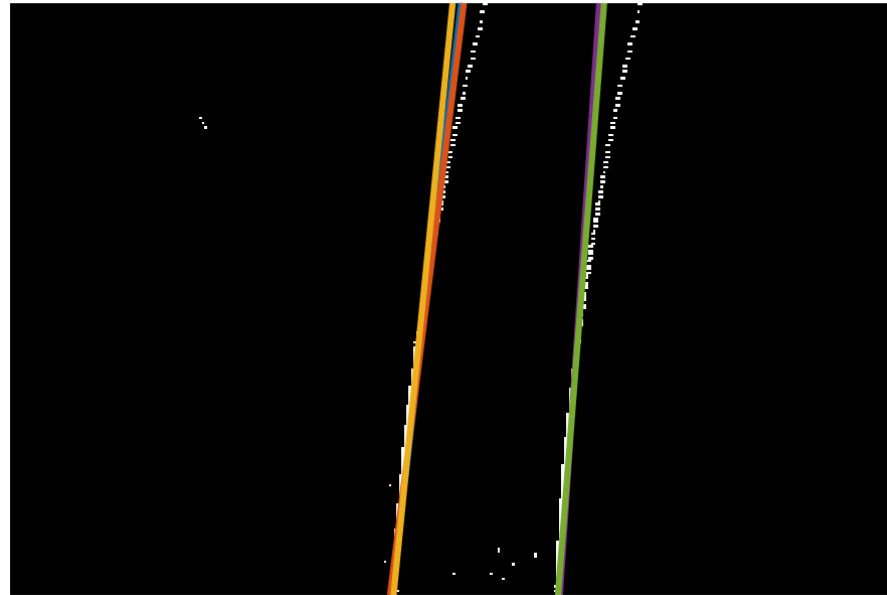


FITTING, LOCALIZATION AND EXTENSION

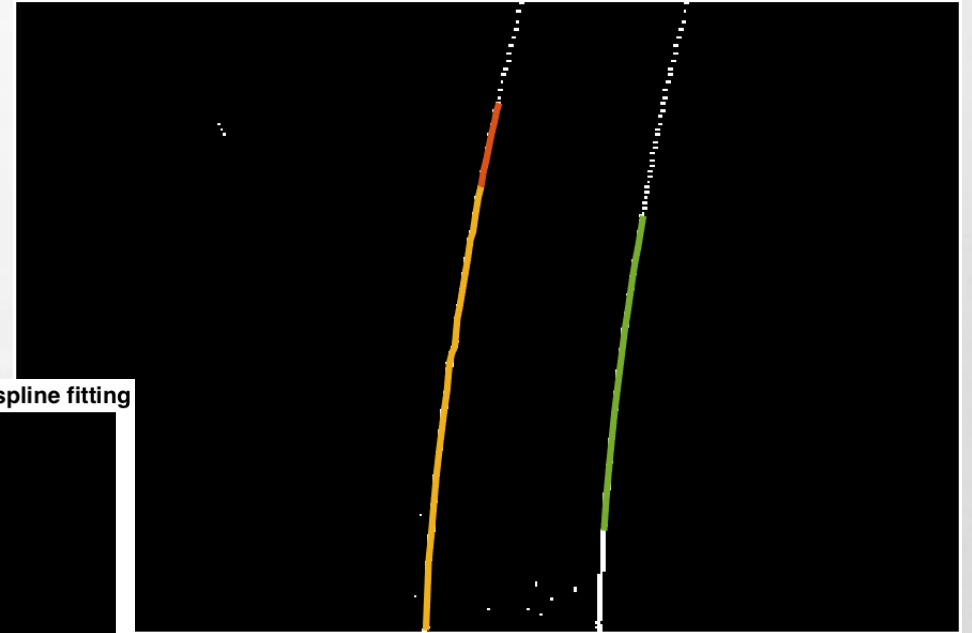
Finding where the pixels are concentrated in the image



Lines fit to subregions of image. The inliers of these lines are used for spline fitting

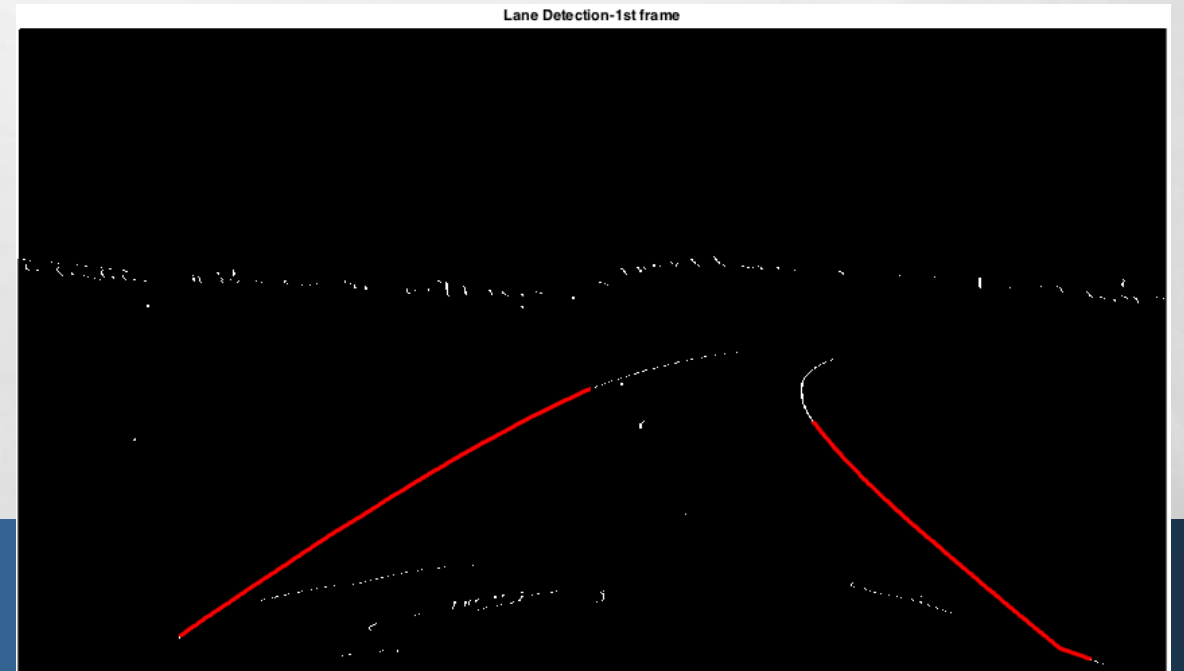


Spline fitting. Need to extend these to cover the complete lanes

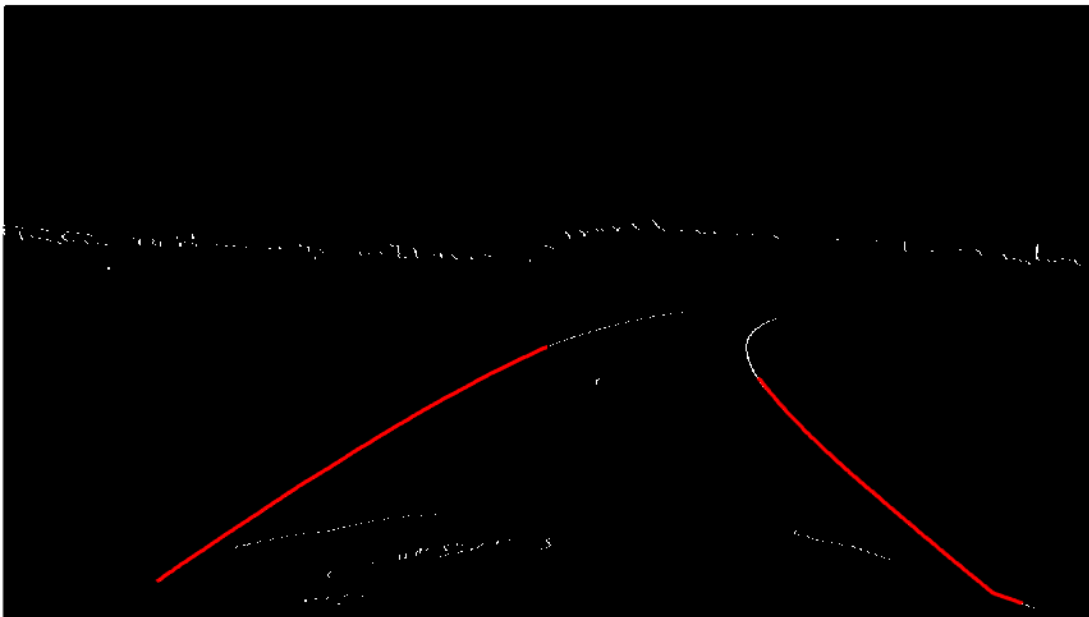


MODIFICATIONS AND IMPROVISATIONS

- **USE THE GIVEN ALGORITHMS ON THE FIRST FRAME**
- **SUPERIMPOSE THE TRACKED LINES ON THE NEXT FRAMES**
- **USE THE SUPERIMPOSED DATA TO GET A BETTER ESTIMATE OF NEXT TRACKED LINES**



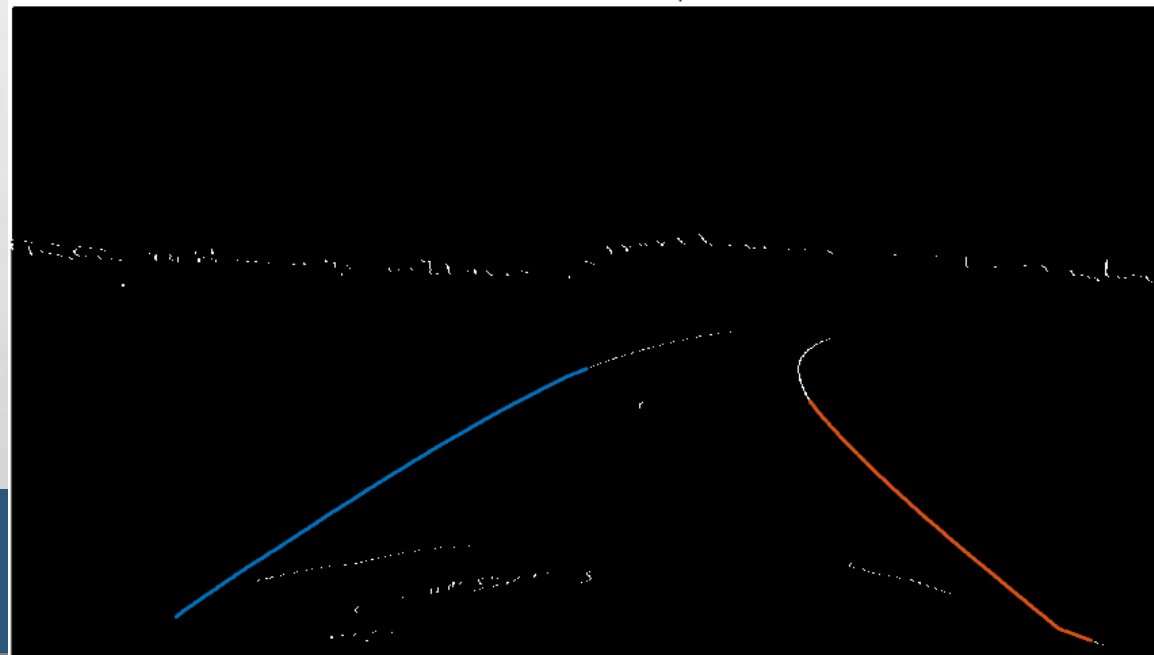
Previous frame lanes on next frame



Lane Detection-2nd frame



Inliers in next frame for lanes tracked in previous frame



CHALLENGES

- **SHADOWS COVERING THE ROAD**
- **POOR QUALITY LINES**
- **RANDOM MARKINGS ON THE ROAD**

FUTURE SCOPE

- **LOOKING AT MORE THAN JUST SINGLE LANES**
- **UNMARKED ROADS**

RESULT

- [VIDEO LINK](#)