Machine Vision Inspection of Railroad Track Components

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The focus of this summer was two design projects

- **GPS location information**
  - Monitor track component health
  - Provide location of defective components found
  - Mark individual ties and check tie spacing

- **Lighting**
  - Add lighting for video collection under adverse lighting conditions
  - Improve component identification
Background

• AAR Project
  – Regular inspections
  – Manpower requirements
  – Component inspection
  – Class 1 track
  – Reduce repair time and track closing

• Summer Internship
  – Improve track inspection using Track Video Cart
Accidents

• Federal Railroad Administration accident database
  – Rail anchoring and turnout components
Selecting viewing angles
Component Inspection
This summer

- Determining component location
- Capturing video in adverse lighting conditions
Location Requirements

• Mark individual component inspection
  – Accuracy within 21”
  – Higher sampling speed
Lighting Requirements

- Allow video capture in adverse lighting conditions
- Low power consumption
Location solutions

- Garmin GPS 18x 5Hz
- Odometer
  - Optical encoder
Lighting solution

- LED worklight
- Sound off signal 1400 lumen worklight
Testing
Future projects

• Odometer
• Motor
In Summary

• More efficient track inspection
• Location data
• Video lighting
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