

Materials and Maintenance Considerations for Infrastructure Critical to Connected and Autonomous Vehicles

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Materials ??

- Sign Sheeting
- Pavement Marking
 - RPM
 - Temporary Tape
 - Temporary Paint
 - Permanent Paint/Thermo



Existing Materials -- Human Driver



Vision:

- Emergency Vehicles
- Flashing Lights, strobe, LED flash, arrow board
- Work ahead signs
- "Penalty Signs"

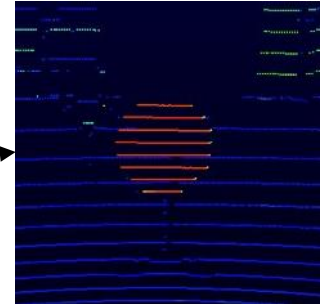
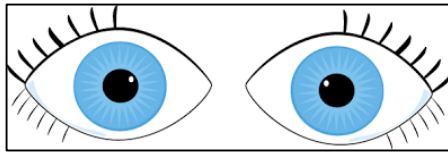
Sound:

- Flashing Lights – strobe, LED flash, arrow board
- Work ahead signs
- "Penalty Signs"

Strength:

- Rapid Interpretation of Existing Technology (Hand Signals from Flagger)
- Complex situational awareness – "wide turns for trucks"

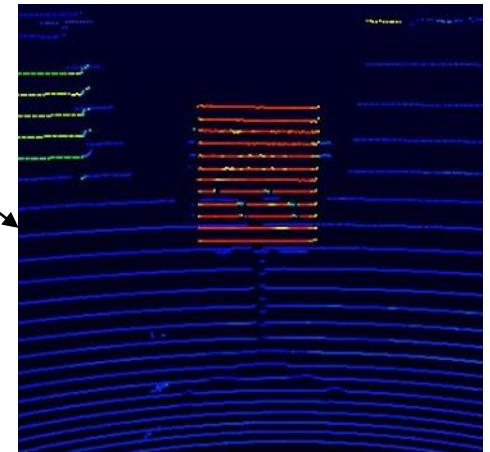
Existing Materials -- Automomous Vehicle



- LIDAR

Strength:

- Constant Vigilance !!!
- No Distractions –
Texting/Calls



Perception Differences

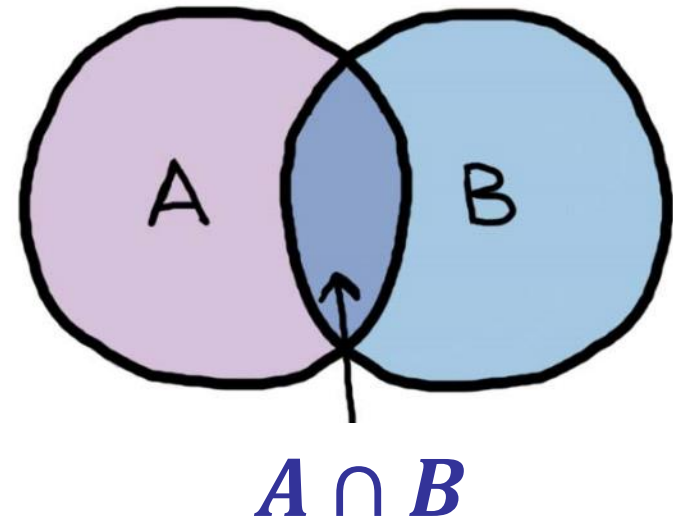
A: Human Perception:

- Eyes (Distant fire outside of R/W)
- Ears (Emergency Vehicles/Weather Warning ??)
- Nose (Smell of Smoke ??)
- Feel (slipping, rutting, potholes ???)

B: Computer "Perception":

- LiDAR (reflective vs. non-reflective materials)
- Video Processing (visual only)
- Infra-Red Video
- Accelerometers
- Anti-Lock/Anti-Roll Systems
- "Crowd Source Data" – V2V
- DRSC – V2I

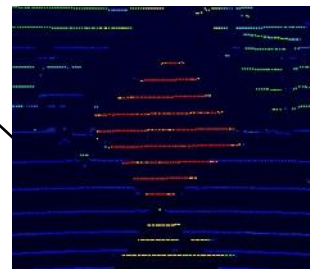
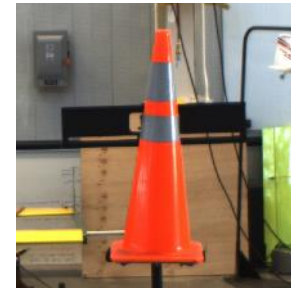
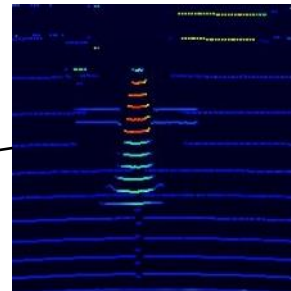
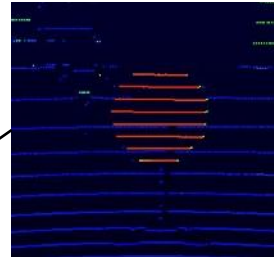
VENN DIAGRAM!



Maintenance Considerations

Roadway Maintenance Operations

- Lane Closures for repair work



Maintenance Considerations

Mobile Maintenance Operations

- Lane Closures for mobile repair work



Maintenance Considerations

Winter Operations –

How will AV's identify and avoid snowplows? Do we need to apply retroreflective tape to the back edge of plows?



New Communications Technology to
Ensure AV compliance

DSRC

Maintenance Considerations

Outreach and Engagement with Local Agencies to Support AV compliance



92 County Highway Departments



What about Utility Companies???



200+ Cities and Town Street Departments





INDOT – State Leadership



Thank You

Questions??

