Road Monitoring Evaluation

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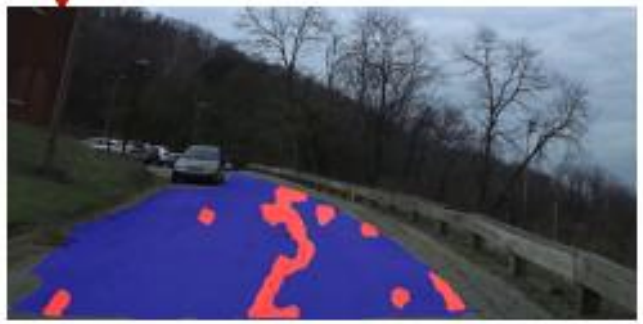
Road Crack Detection

using computer vision and machine learning

Segmentation of road area

Detection of cracks



Map of Road Damage

Severity: Low Medium High

Average score of each road segment

compare cartegraph with our data

- Our data was collected within the last year
- Score on amount of cracks
- Our score: 1-5

- Cartegraph data was collect spring 2016
- Updated to 2017: deterioration factor plus newly paved
- Score: Overall Condition Index (OCI)
- Converted Cartegraph (0-100) score to 1-5

Direct comparison

- 54% - scores are the same
- 27% - scores differ by 1
- 19% - scores differ by more than 1

Scale for scores:

Reasons for differences

- **Time**: Example: Some were correctly classified by us as good roads, they were newly paved (Cartegraph score was probably not updated or our database is already out-of-date)
- **Weather**: snow day
- **Distortions**: glare, motion blur, etc.
- **Different measures**:
  - US: Cracks
  - Cartegraph: OCI (includes e.g. rutting)

Examples

glare

blur

Many of these problems can be corrected with

- manual checking
- additional automatic checks
- (re)take data under favorable conditions

Estimate of agreement after corrections

- ≈75% - scores are the same
- ≈ 20% - scores differ by 1
- <5% - scores differ by more than 1

comments

- Carthegraph about 2% accurate
- More visibility of the collection
- GIS data not clean
- Carthegraph updated brick/asphalt etc.
- Scenario builder needs to take into account more things like mobilization costs, utilities (who has different schedule), political