



Advances in collection of Highways Data

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Integrated Intelligence

Advances in data & highways technology

1. Data tipping point
2. Your data is your data but now others have better data(?) or soon will?
3. What we're doing with big data that has had interest nationally and our ongoing curiosity

The world of roads data is changing

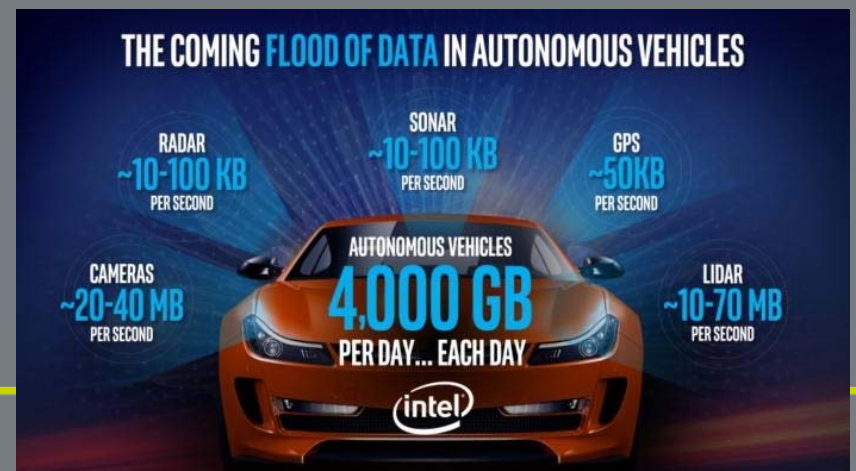
- Road and infrastructure data is now being collected by others
- Advent of advanced technologies
- The arms race on data and information from cars
- Open data and combining data becoming ever more sophisticated

Data **tipping** point

- Service Data
 - Asset Management
 - Govt Returns
 - Service Performance
- Council/Officer derived data/Management info
- Complaints/Media
- Open data & data portals, feral data
- Data fatigue.....

It's not **just you** interested in roads

- Jaguar Landrover – Pothole detection
- Uber – Locality condition mapping
- Nissan – Projecting analysis of road conditions
- Volvo – Road ice warnings to Swedish authorities
- Ford – Pothole Alert Systems
- Sidewalk Toronto (Google Infrastructure)
- CROWD4ROADS
- Community Cameras
- RAC Foundation



Big Data and Gaist

- **Eternal curiosity**
#notjustasurveycompany
- Are roads deteriorating faster than anticipated?
- What correlations are there between large sets of data?
- How do we evidence the need for extra money for councils?
- What technologies can accelerate our understanding?



The secret life of roads
is not a secret anymore!

Big Data and Gaist

- We surveyed all the A, B & C roads in England in 2017
- When combined with our other data that's over 150,000km of roads
- 1.2 Petabytes
- Developed high accuracy image technology (a patent pending world first)
- Big questions to answer, weather, traffic etc
- Accurate deterioration modelling
- Lidar cameras//Drones/3D cameras capabilities

Developing ways of getting the right data

HighwayView



Early Outputs:
Patent App: PCT/GB2017/053410

HighwayView

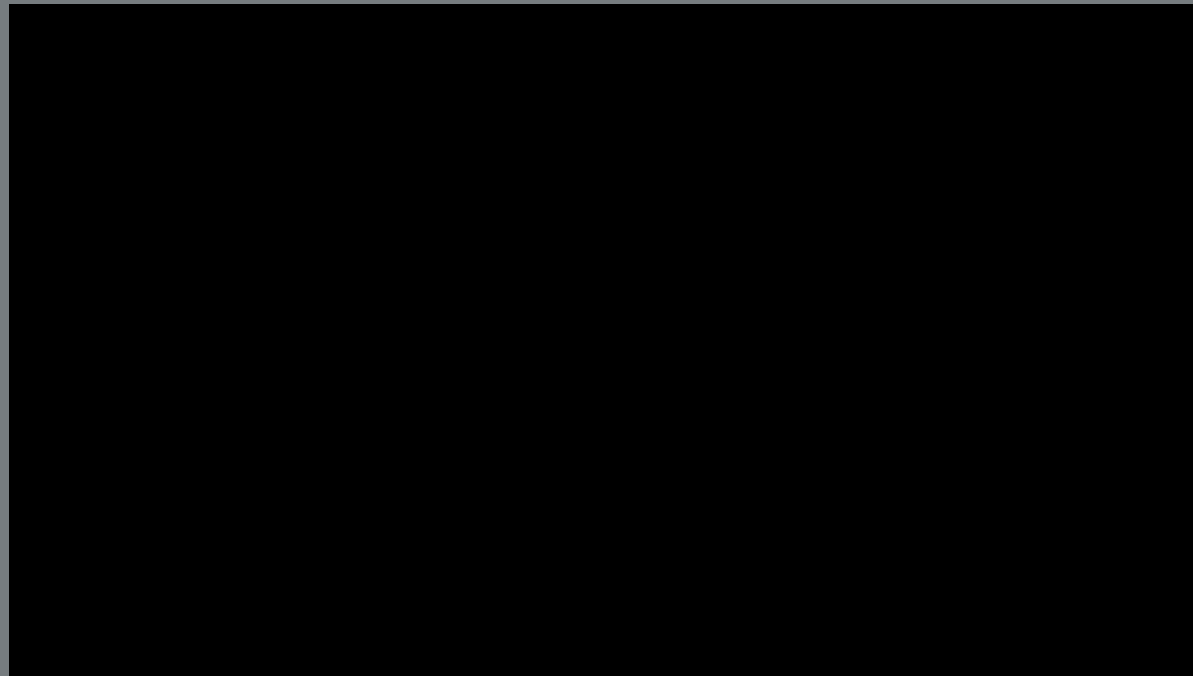
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BridgeCat Concept

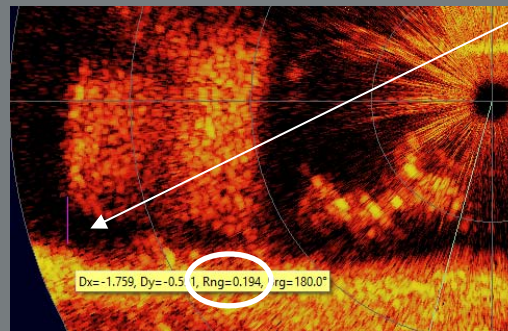
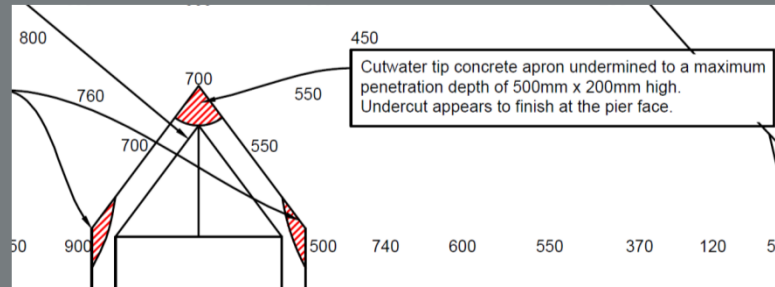


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Final Design



Sonar positioning – surfaces

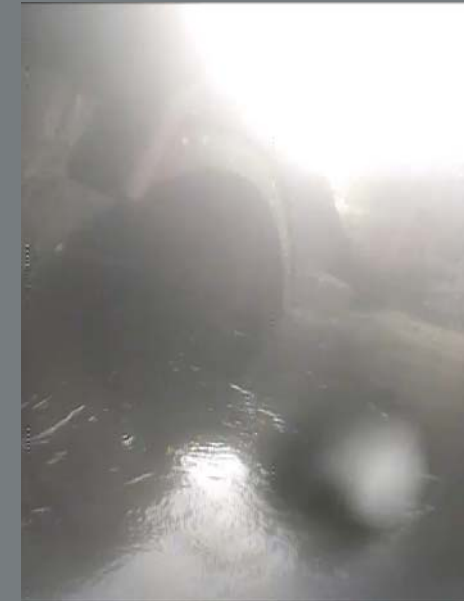


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Underwater camera



- Inspection tool
- More detail on features identified by sonar
- River bed material
- Inspect existing scour defence measures



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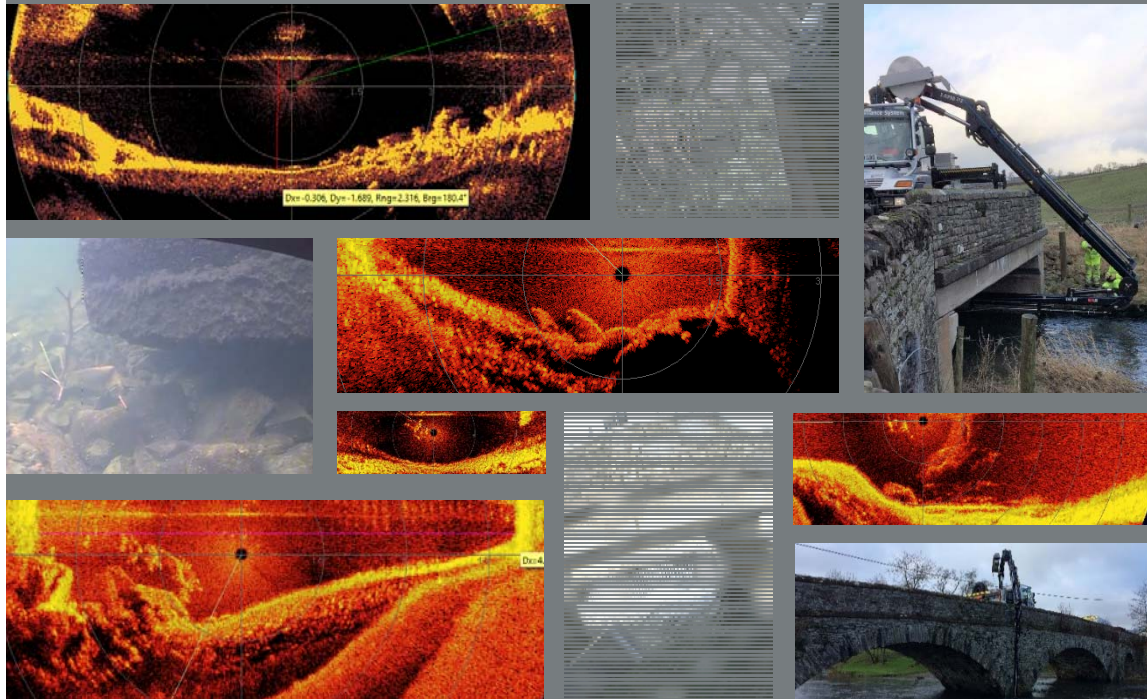
Above water camera

- Inspection tool
- Current state of repair
- Record of site observations
- Detailed inspection of brickwork
- Reference data for future inspections



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Translating the results



- Bank of evidential data
- Inspection process developed
- Site scour history
- Environmental factors
- Working with Bridge Industry & Cumbria Bridge Team

PotholeSpotter

- Its not about cameras, it's not about spotting potholes.....
- Three diverse councils, three unique road environments, three unique local authority environments
- When is smart not smart
- 1gb per vehicle per day
- Deterioration in real time

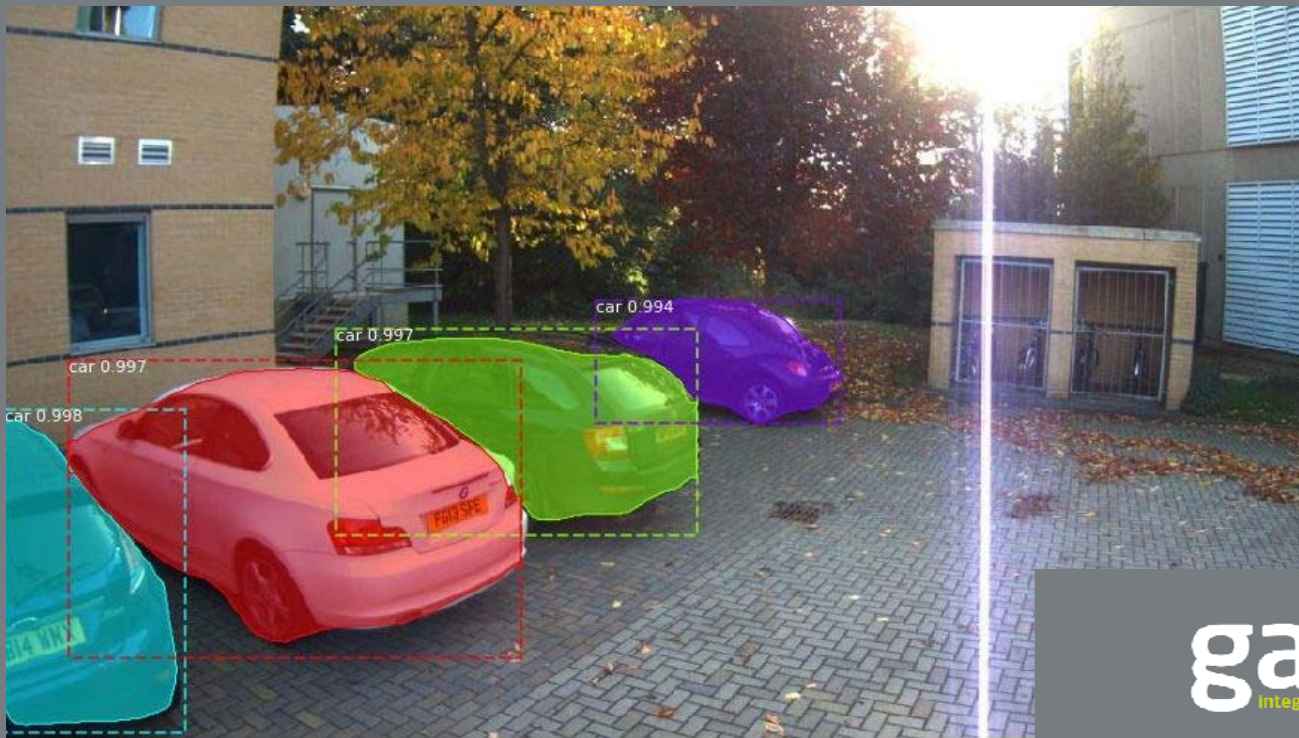


PotholeSpotter



- Refuse Trucks
- Local Buses
- Electric Bikes
- Thermal Imaging
- Council Vehicles

Gaist Image Recognition



Gaist Image Recognition

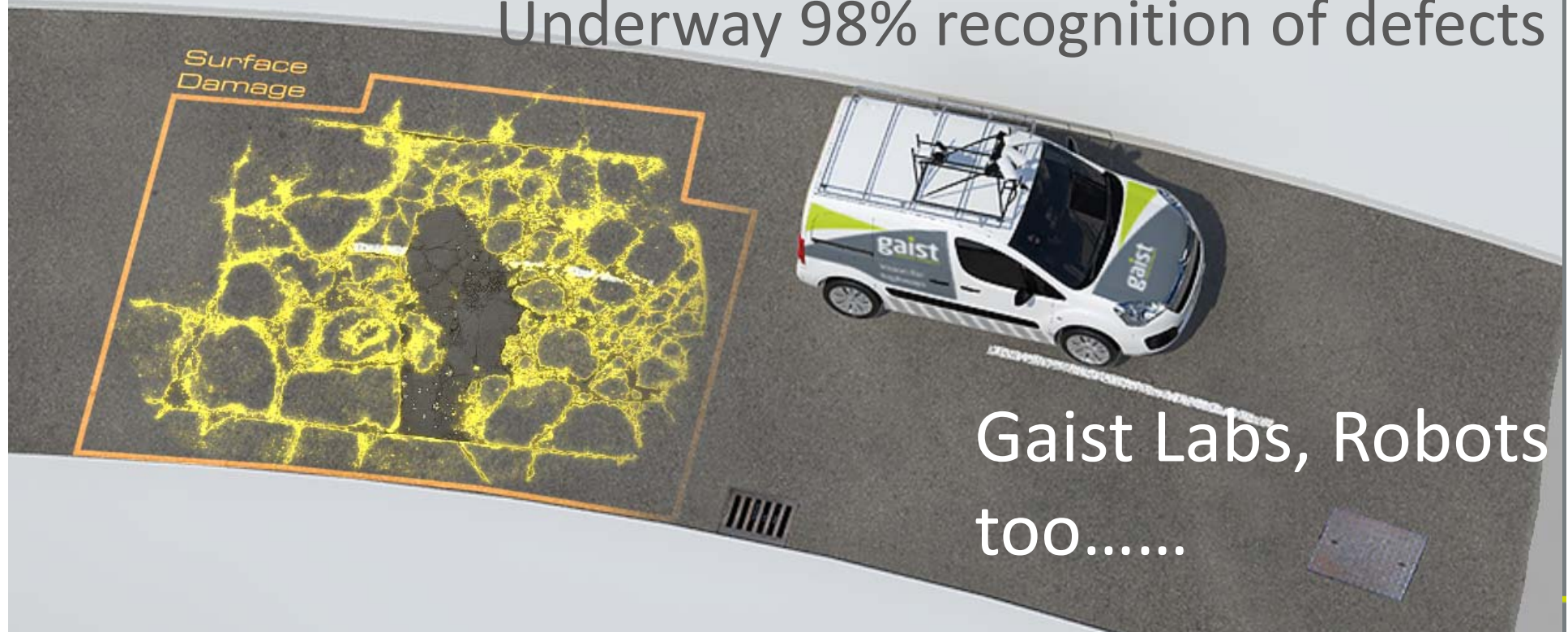


Gaist Image Recognition



Our **Ambitions** Continue

AI and Machine Learning of road defects already
Underway 98% recognition of defects



Gaist Labs, Robots
too.....

Summary

1. Think differently about your roads because others are
2. Data “hard facts” don’t compel people, stories do
3. Mix and match your data because others are
4. Data has its limits but your role in blending it doesn’t
5. Don’t let your data trap you down a cul-de-sac.....

Thank You

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