BEAMAGINE

Adding dimensions to 3D

Augmented lidar

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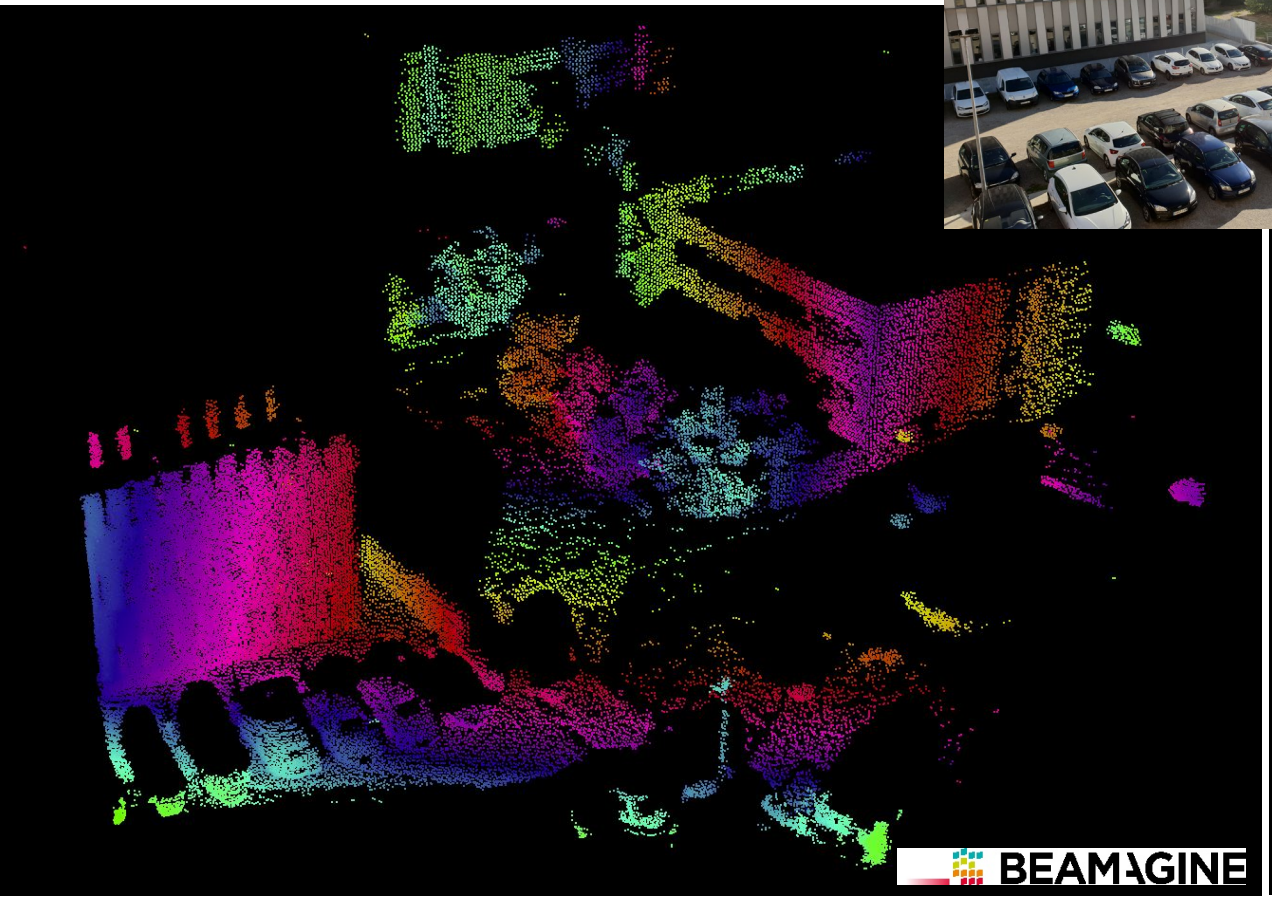
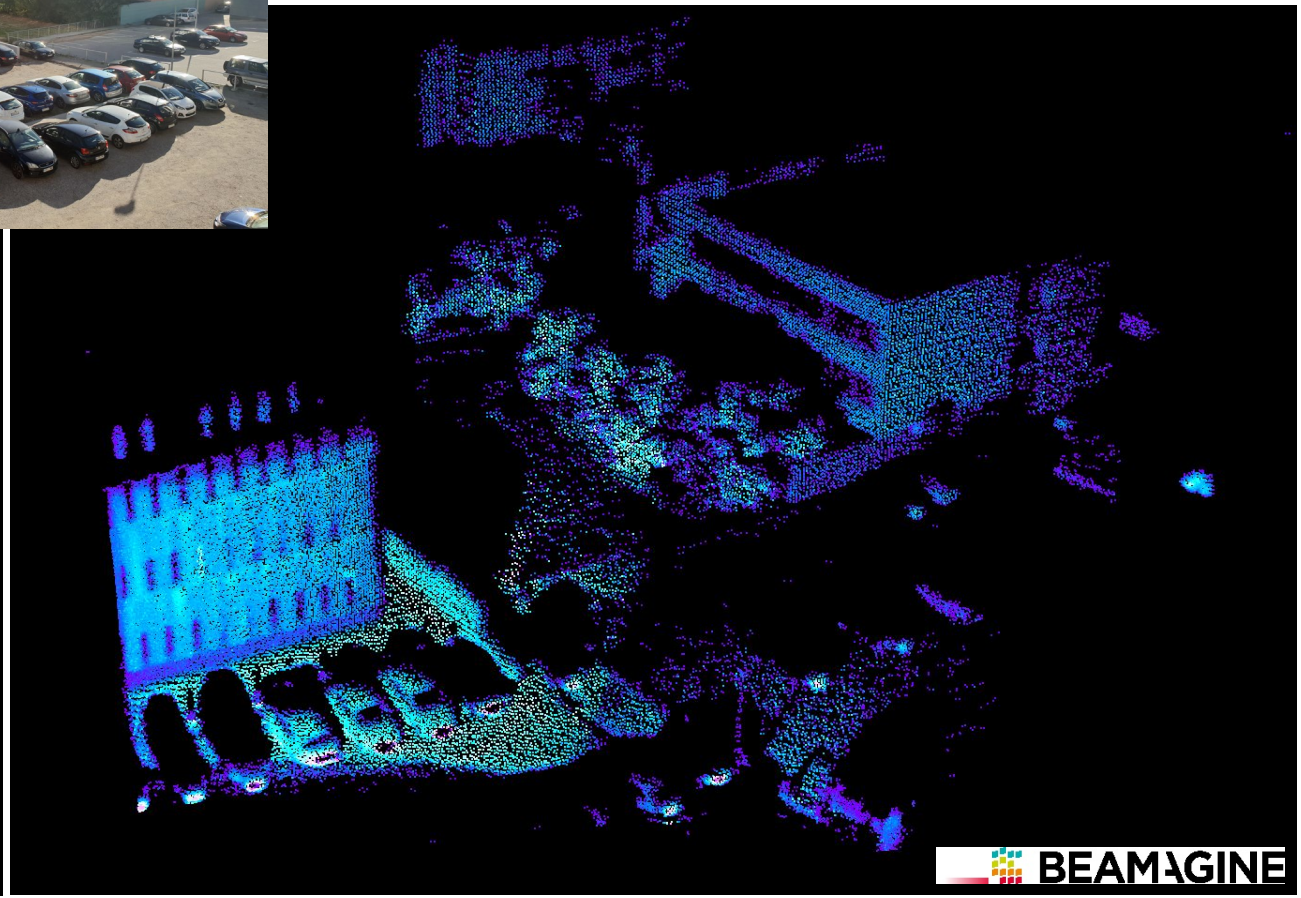
Lidar imaging by Beamagine

- Solid-state lidar
- Real-time videos

- High resolution (0.05deg/800x400 px)
- Own technology (11 patents)





See real-time videos at https://beamagine.com/applications

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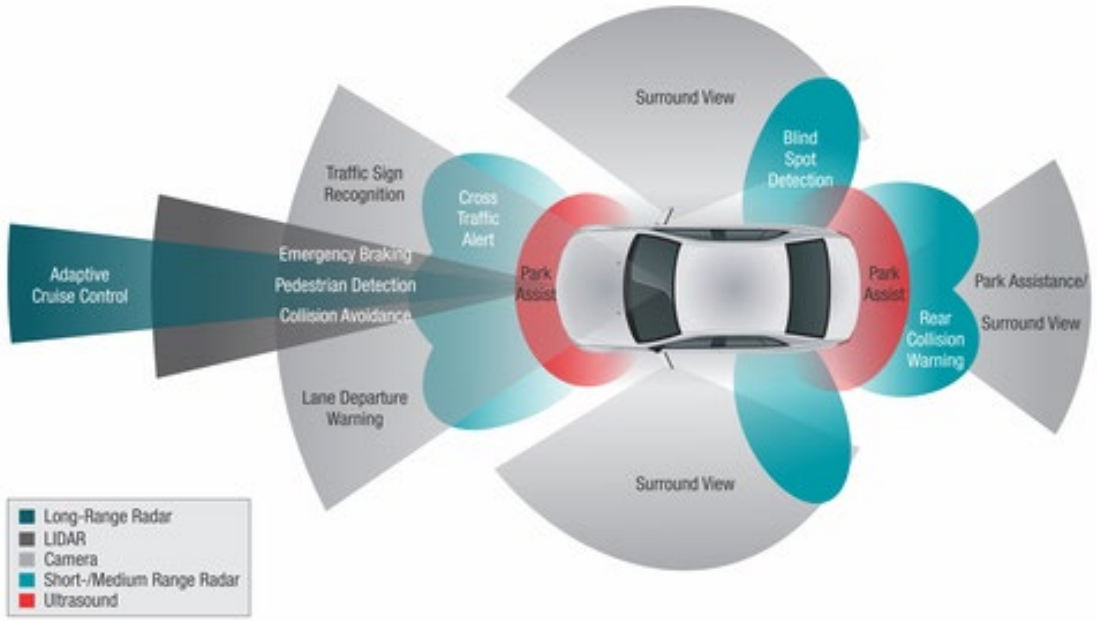
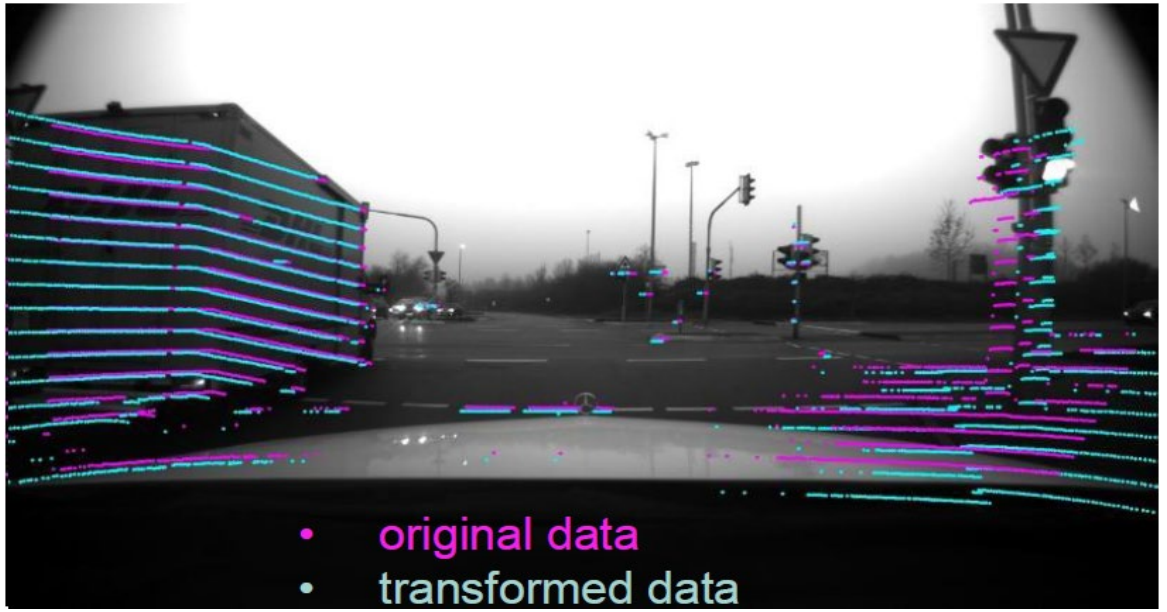
But sometimes 3D may not be enough

- Several use cases benefit from more than one sensor
  - Diversify failure modes
  - Diversify measurement principle (e.g.day/night)
  - Redundancy
  - Additional information



- But that comes with the pain of fusing info from different FOV/optics/parallax…
- Lots of work needed before data ready for AI training!



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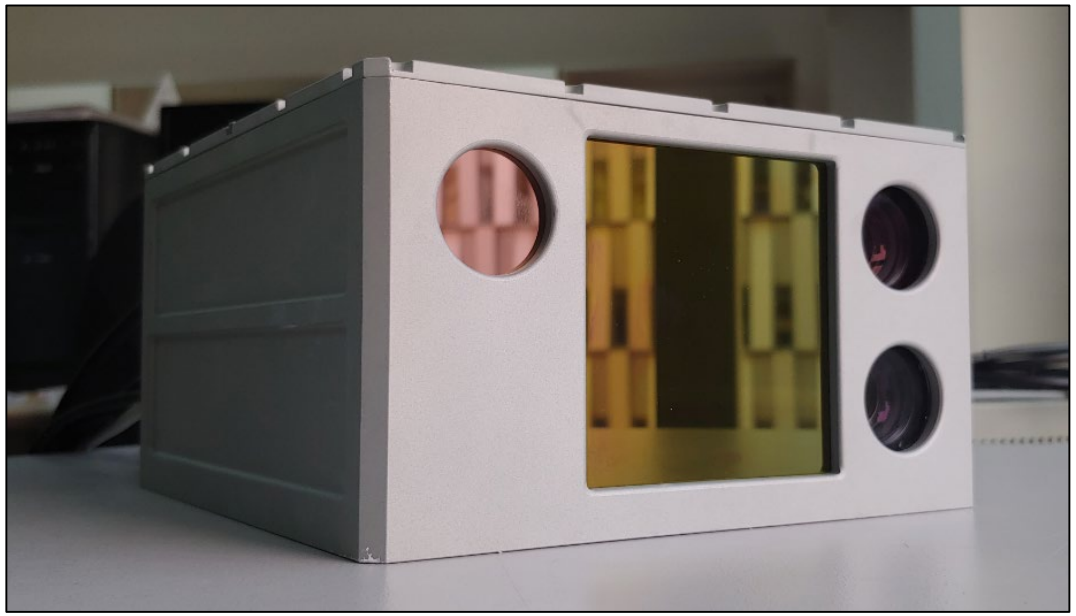
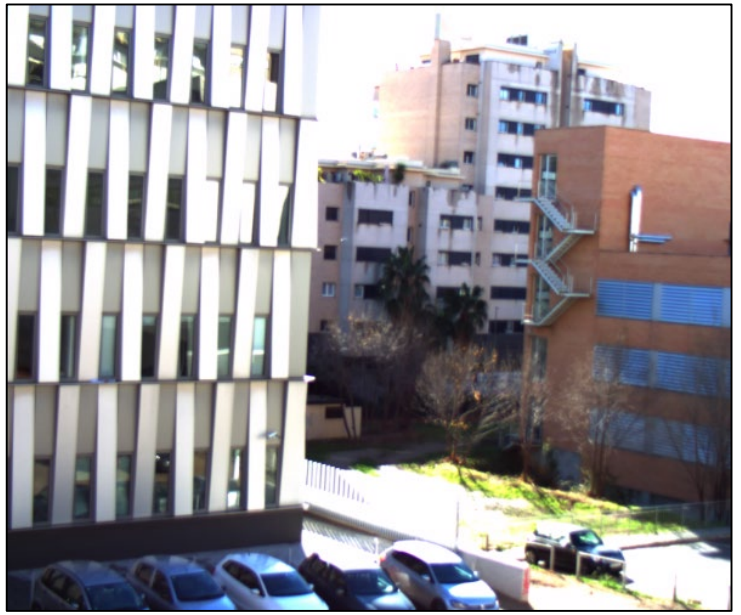
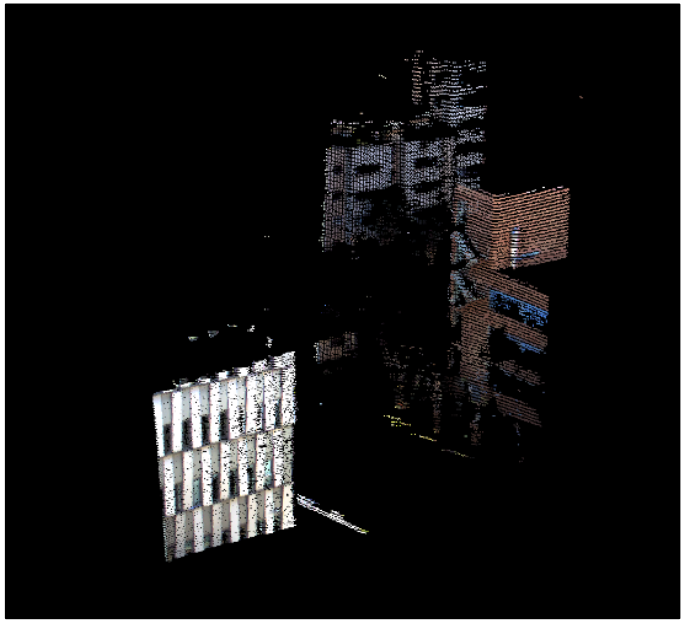
Multiple imaging modes: 2D + 3D

- Real-time data fusion free of parallax error (hardware and software)
- Mixing 2D+3D mean new processing capabilities in object detection and recognition
- Not just RGB: RGB/NIR/SWIR/thermal/polarimetric work
- Up to 12 imaging modes in a 10x19x18cm box







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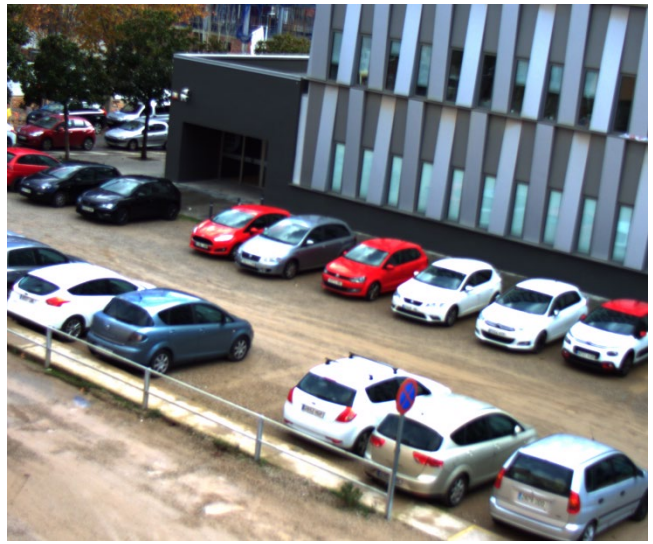
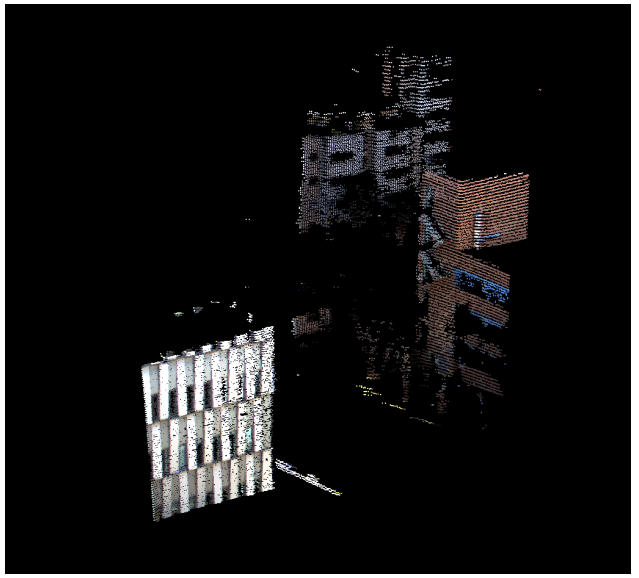
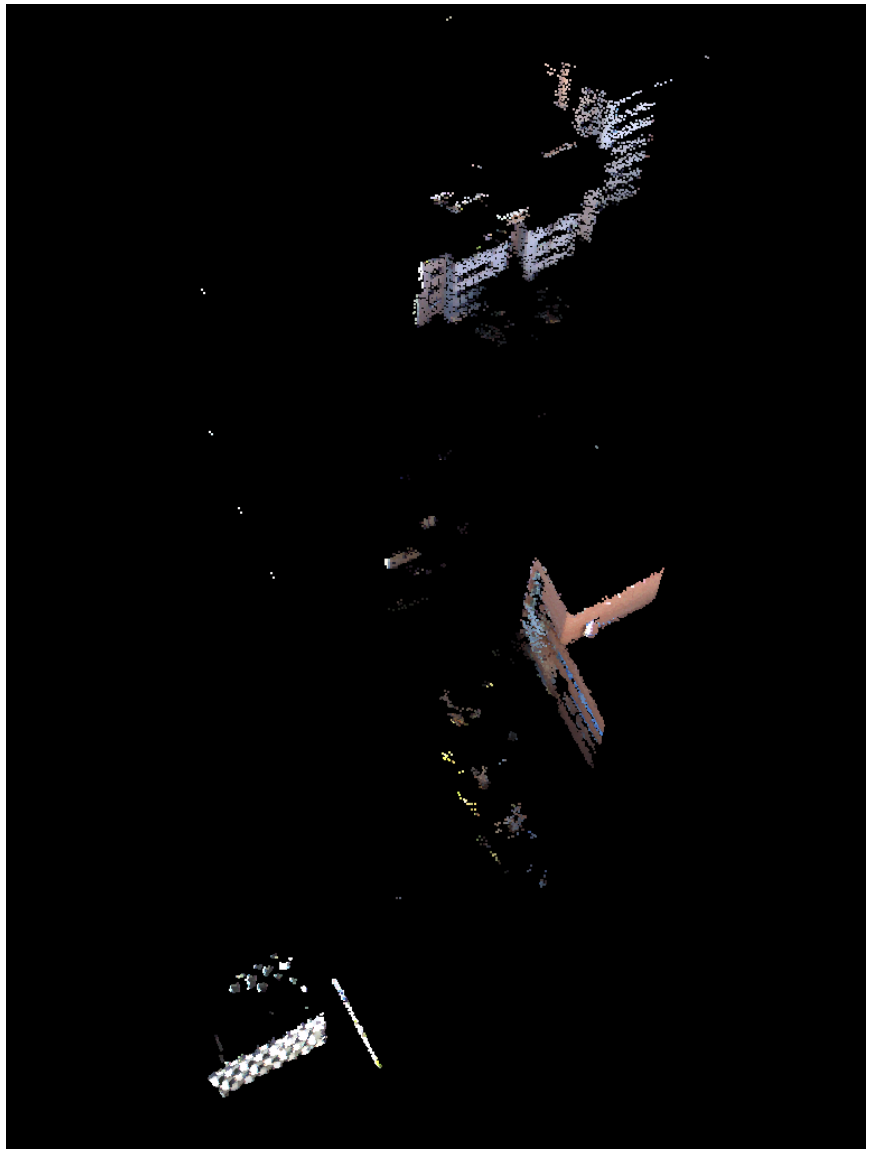
Data fusion modes

3D LIDAR + RGB

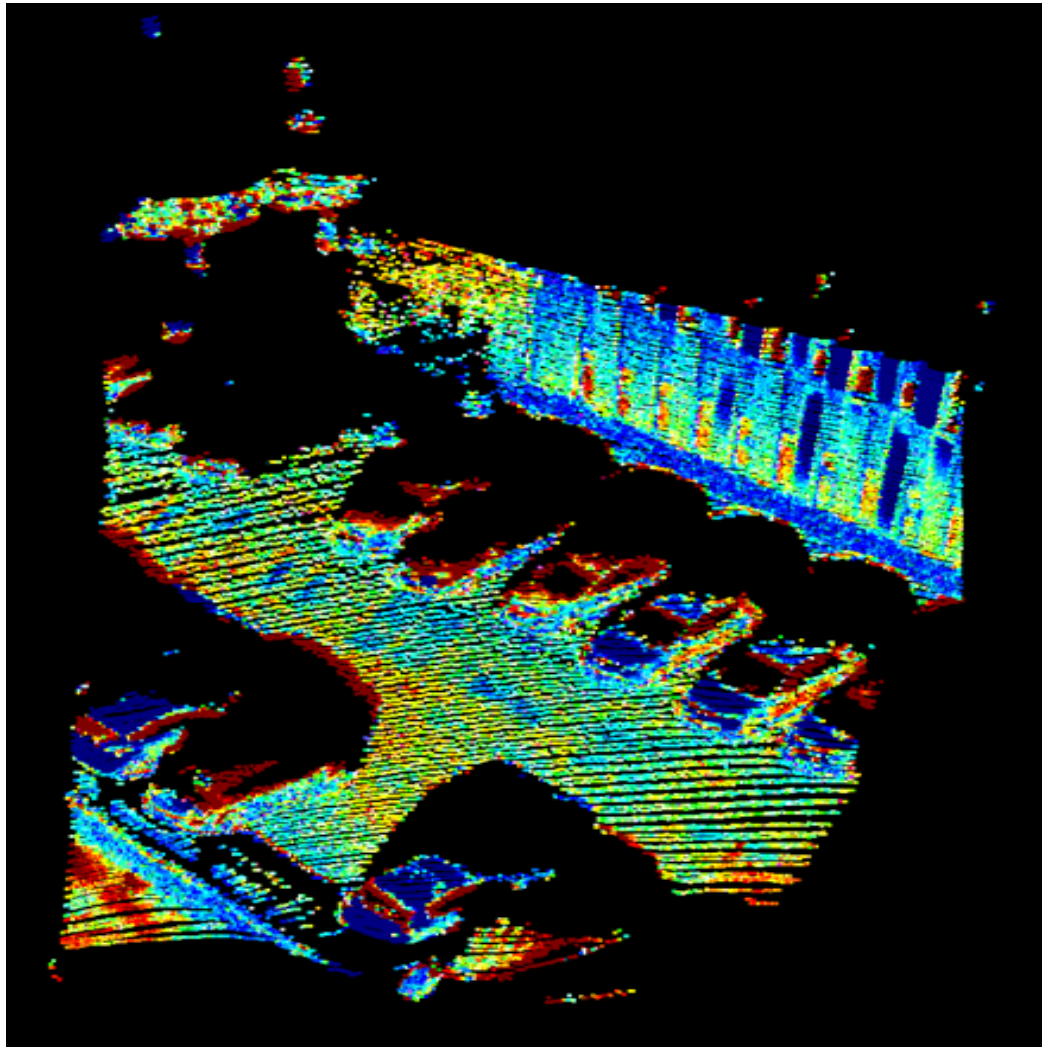




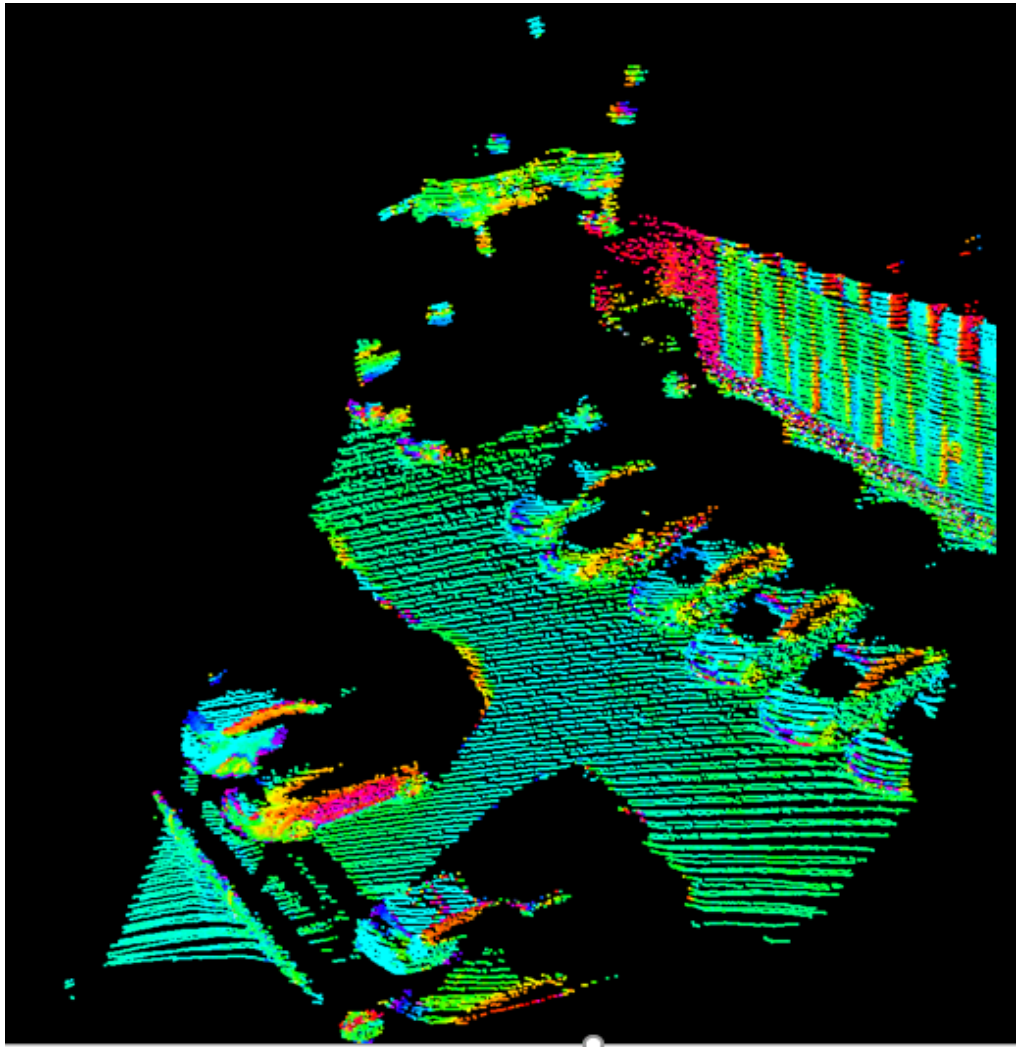


Data fusion modes

3D + Polarimetric DoLP

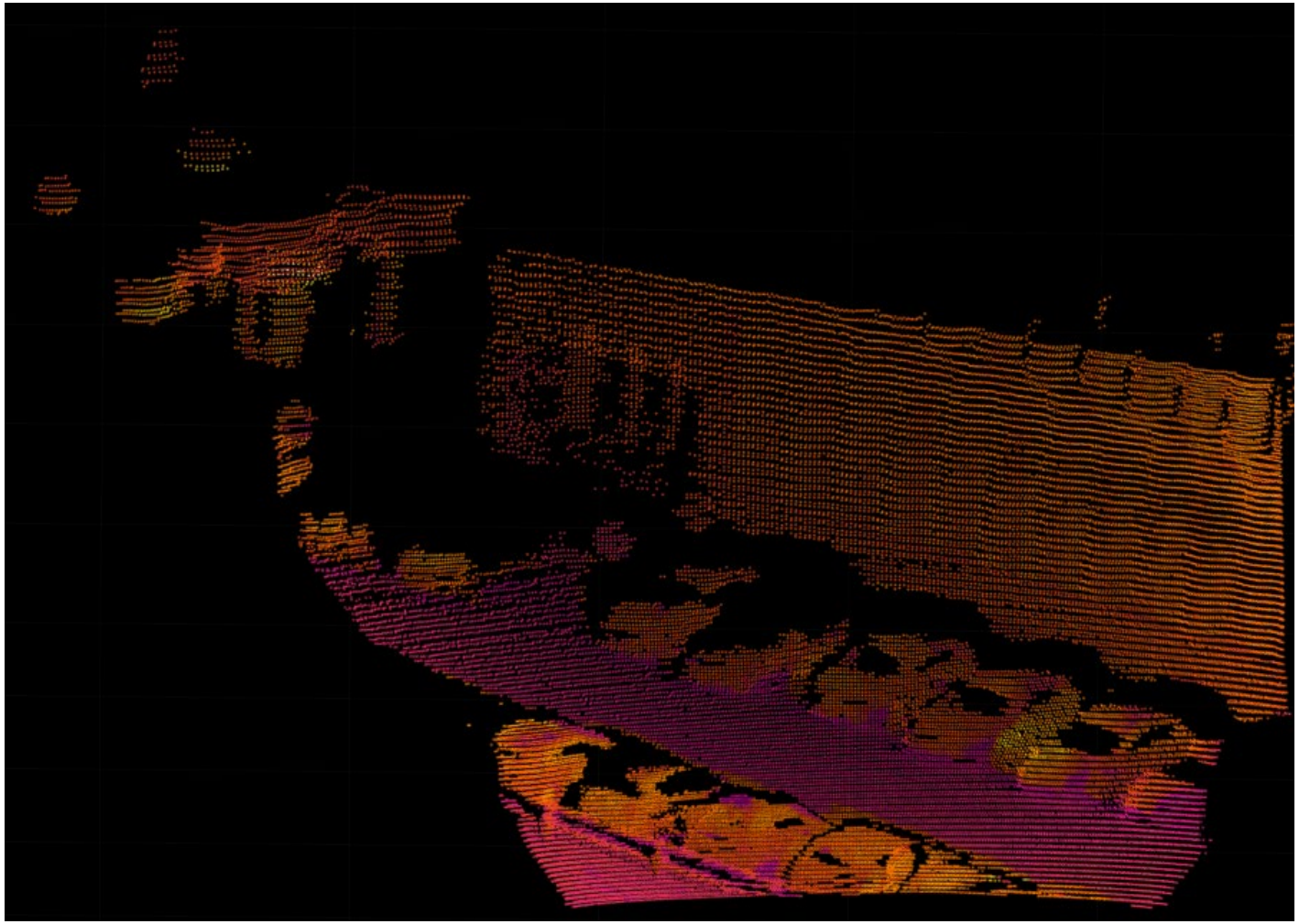


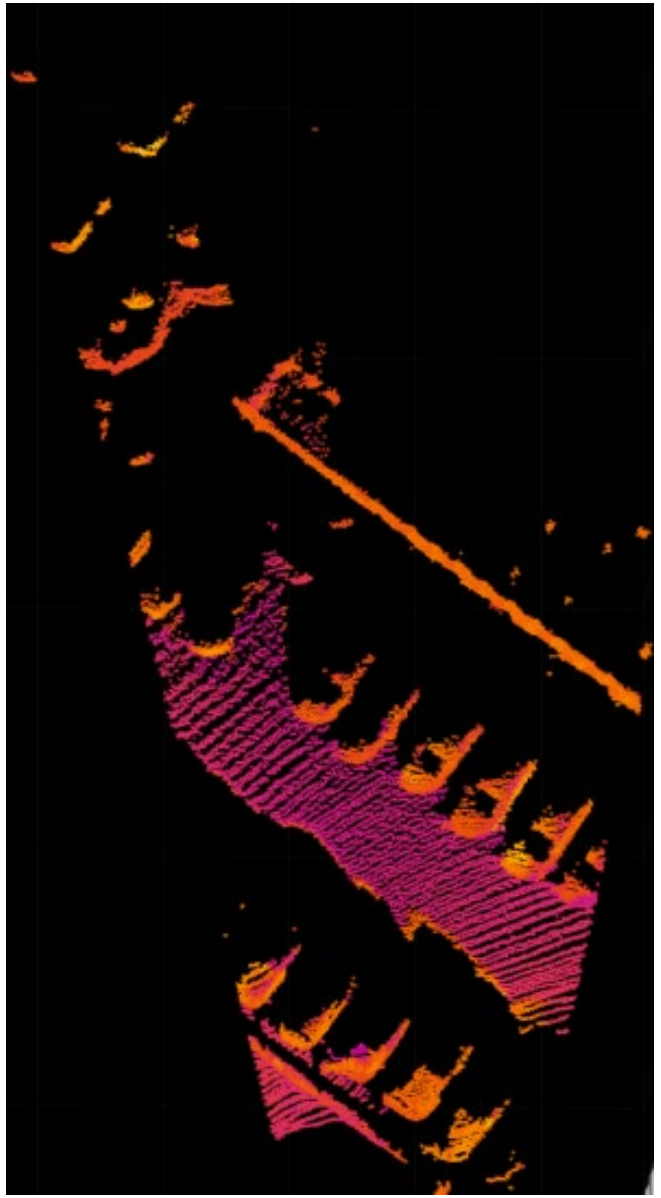
3D + Polarimetric AoLP



Data fusion modes

3D LIDAR + Thermal





Reference specification

- Some parameters can be **tuned** according to the customer specification (with trade-offs), e.g:
  - Image spatial resolution
  - Frame rate
  - Angular resolution
  - FOV
  - Point rate

- (and/or) Imaging modes
  - RGB
  - NIR
  - SWIR
  - Polarimetric
  - Thermal

Specifications	
Electro-optical unit	
Wavelength	1550nm/1064nm – Class 1 full eye-safe
Range	>100m @ 10% reflectivity
Point rate	1.2 Mpoints/s
Image spatial resolution	600 x 200px
Frame rate	10 Hz
Field-of-view (HxV)	60 x 20º
Angular resolution	0,1ºH x 0,1ºV
Range accuracy	±2 cm
2D imaging modes	Tailored (RGB/NIR/SWIR/Thermal/Polarimetric)
Inertial sensor	Included
Mechanical	
Size (WxDxH)	**10x20x20cm**
Weight	2Kg
Electrical	
Power consumption	25W
Supply voltage	12 VDC
Machine Interface	UDP Ethernet packets/Video signal
Software	
Integration	Linux driver (ROS compatible available also) DLL for Windows
Test application	RVIZ and Beamagine 3D+2D Visualizer

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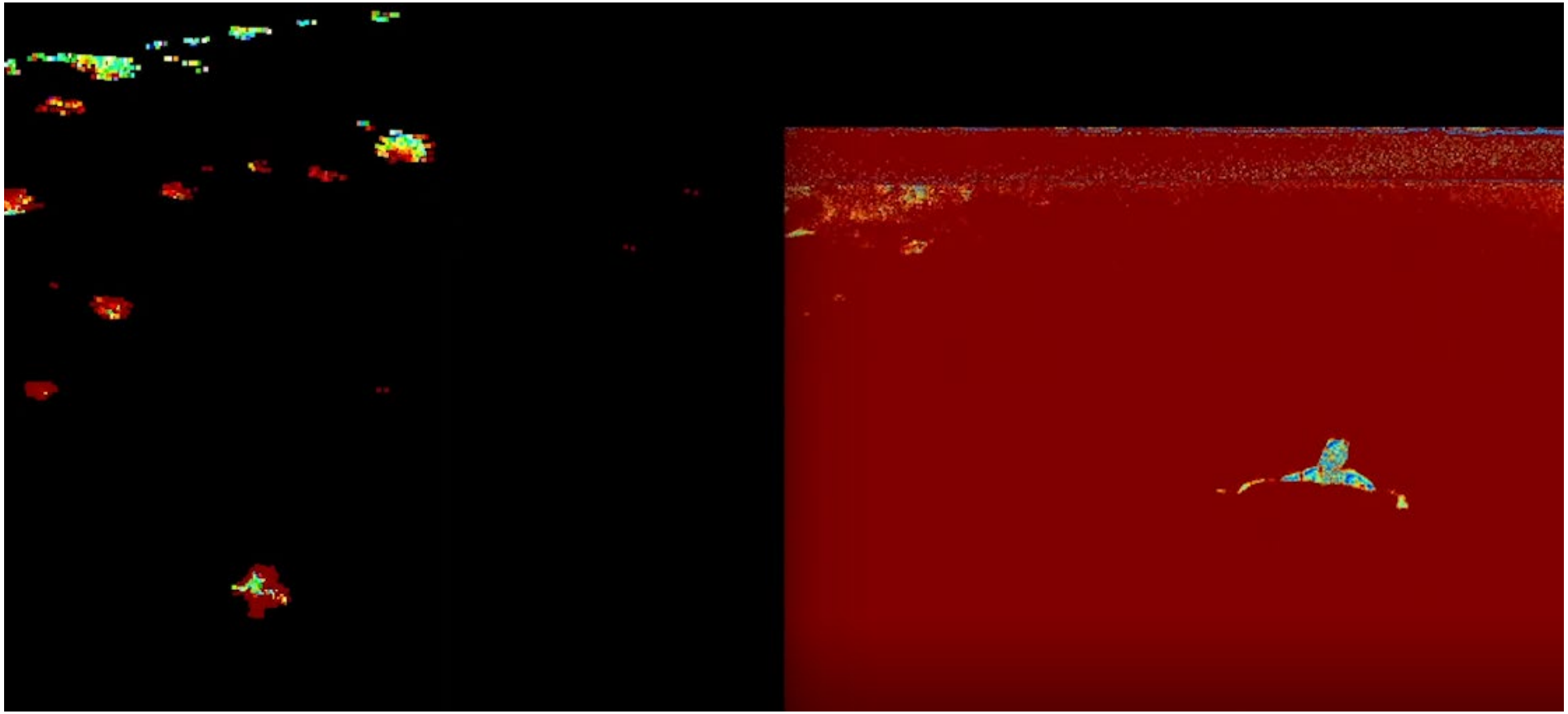
Example use case: man to water



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THANKS FOR YOUR TIME!

See you at

Member of the Global IFSEC Group
SECON 2020
International Security Exhibition & Conference
20th anniversary

IFSEC INTERNATIONAL
08-10 September 2020
ExCeL, London, UK

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