Why Sensor Fusing for Driving Assistance

Camera
- + High-res Semantics
- − No depth Sensitive

Radar
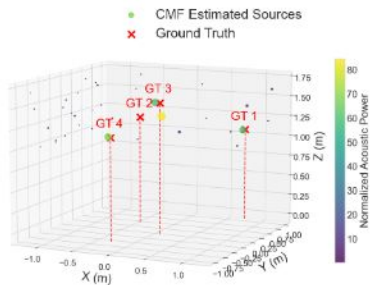- + Robust to weather
- + Range/vel
- − Poor detail

- Cameras → rich semantic info, but sensitive to weather/lighting.
- Radars → robust, depth & velocity, but poor semantics.
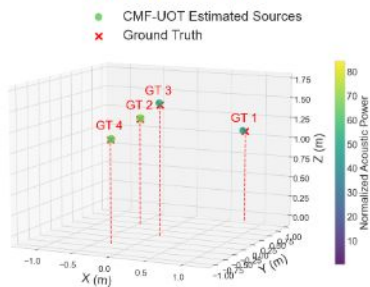- Challenge → Fusion of heterogeneous sensors.

"We propose a unified fusion framework based on Optimal Transport."

Ilyes JAOUEDI, Gilles CHARDON and José PICHERAL (L2S)

From Proof of Concept to Radar–Camera Fusion

Acoustics - Camera POC:

Validated with microphones & speakers

CMF Estimated Sources
Ground Truth

(a) Full point cloud with CMF.

CMF-UOT Estimated Sources
Ground Truth

(b) Full point cloud with CMF–UOT.

1D FFT over Range

1D CFAR over the Range axis

Covariance matrix Tensor (M x M x R)

Neural Network

Camera detection

CMF-UOT Fusion

Point Cloud
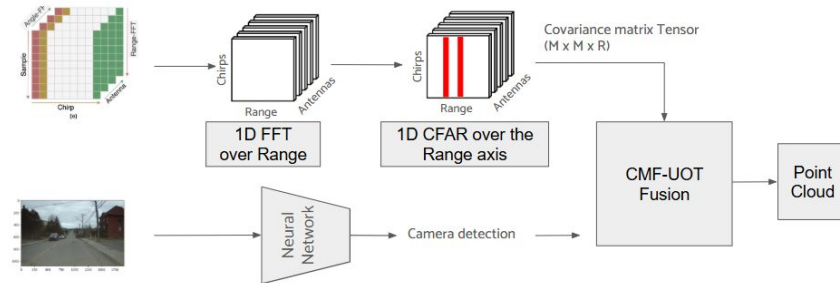
Now extending to real automotive radars

"Come see our poster to see how Optimal Transport enables robust multimodal fusion!"