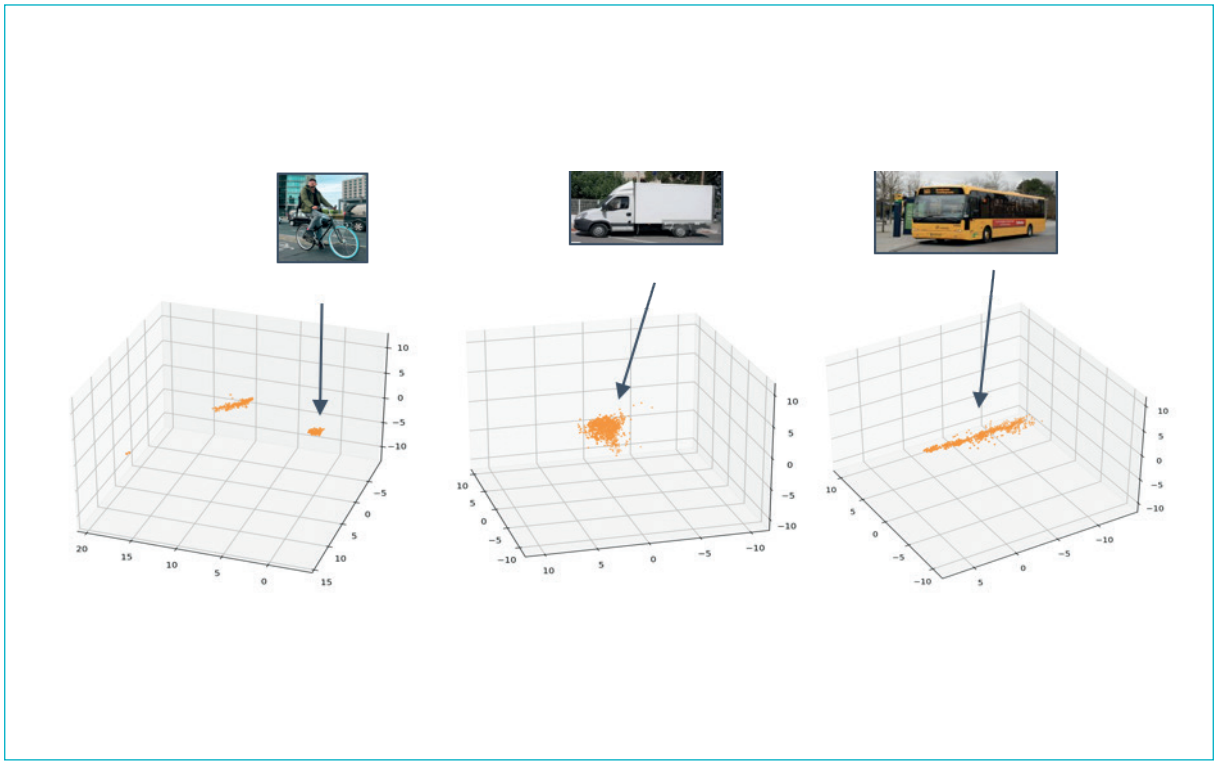
INILAB is a highly qualified full stack software team developing complex data solutions based on hardware, software, machine learning, IoT sensor technology, data processing and visualization.

We deliver ground-breaking tech solutions based on close partnerships, constructive communication and agile workflows.

INILAB believes in green initiatives, and we work towards a sustainable future. We have participated in several large-scale research projects that contribute to the development and demonstration of future smart city technologies and energy efficiency - including EnergyLab Nordhavn and EcoGrid 2.0.

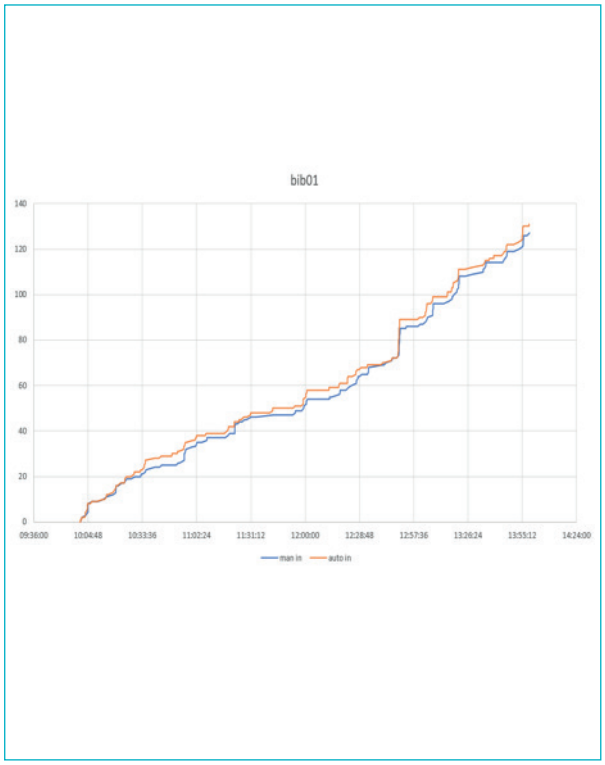
INILAB is located in Svendborg's creative boomtown in the eastern port area, and we work B2B with research institutions as well as public and private businesses throughout Denmark and abroad.

INILAB has developed and deployed two prototype radar sensors. One for counting bypassing people and another for counting vehicles in intersections, both with high accuracy. They are based on state of the art mmWave sensors from Texas Instruments, which can be applied to a large number of sensing applications. https://www.youtube.com/watch?v=hzAm15KZOSk.
mmWave technology has several advantages: no privacy issues, not dependent on light and weather conditions and they are relatively cost efficient.



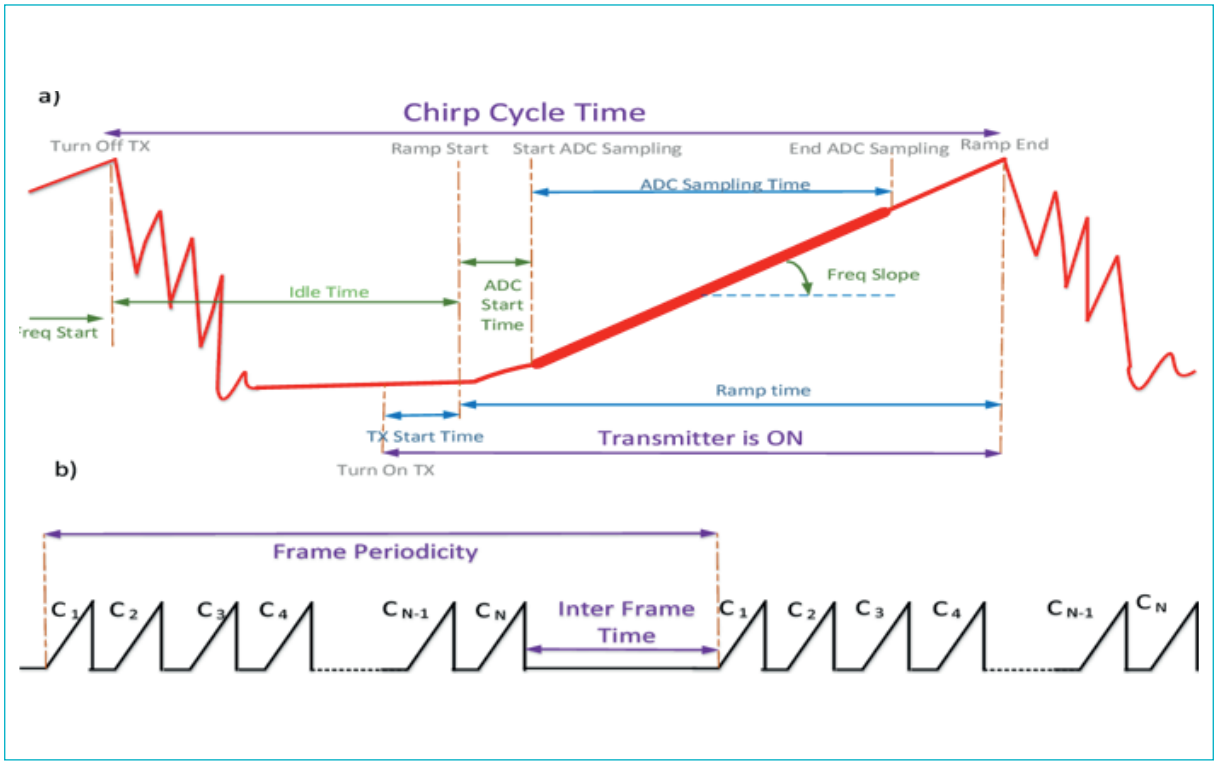
Classify vehicles using state of the art mmWave radar sensors

By classifying types of vehicles (car, bike, truck, bus, pedestrian), we can add important value to our customers. Our preliminary investigations show that it should be possible to separate the vehicle types using the rich real-time data provided by the radar (point clouds, velocity, position of objects and more). This project would involve developing, training and evaluating models for performing vehicle classification in realtime on computing constrained edge devices. Students would be given access to realtime data, from our existing setup from an intersection in Gladsaxe, where two radar units are currently deployed.



Estimating room occupancy using state of the art mmWave radar sensors

Beyond counting how many people are visiting a certain location, our customers want to know exactly how many people are in a given room at one time. Estimating number of occupants in a room by counting all on entrances, requires a very high counting precision else the estimate quickly drifts if enough people move in/out of the room. This project would allow the students to work with our people counting sensor, to develop new algorithms/models which can both increase counting precision of individual sensors, and models that can estimate number of room occupants using the counts from multiple sensors. We currently have 15 sensors deployed in Kulturværftet in Helsingør, and students would be given access to historic and real-time data from these sensors.



Designing a system and user experience for easy configuration of advanced mmWave radar sensors

When deploying new radars there are a lot of radar and counting algorithm parameters which needs to be configured to fit the specific deployment. The goal of this project would be to develop a system and end user interface for deployment and management of devices. Should users use a mobile app for configuring the device? Could the process be fully or semi-automated if the system asks the user to perform certain moves in front of the radar? Could some parameters be learned by the system automatically after some time of operation. We have a number of people and traffic counting devices deployed in real world environments which the student would be given access to, as well as hardware prototypes to use for the project.

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