ID	AKM-02
Supervisor	Amit Mishra & Stephen Paine
Title	Traffic monitoring using low cost Doppler radars
Description	Monitoring traffic intensity is crucial for local governments while planning future road making and maintenance work. It is also useful to monitor the traffic intensity to estimate the level of pollution created by roads. However, existing solutions are very expensive. E.g. https://www.spacksolutions.com/store which costs $1500! The aim of this project is to design a solution that is inexpensive as well as reliable within practical limits. The student will work on a radar based traffic monitoring system. The low-cost Doppler units will be the first sensors to be tried. This may be enhanced by a CCTV cam or a laser proximity sensor..
Deliverables	An inexpensive traffic monitoring system which is reliable and easy to use.
Skills/Requirements	Embedded systems, signal processing, system engineering

GA1: *Problem solving: Identify, formulate, analyse and solve complex* engineering problems creatively and innovatively*	The student needs to understand the challenge, identify the requirements and system specifications. They, then, need to implement it using a spiral design mode to incrementally solve the problem. They need to innovate the right algorithms to give rise to optimal performance.
GA 4: *Investigations, experiments and analysis: Demonstrate competence to design and conduct investigations and experiments.*	This is a project which can easily become quite complicated. To make a minimum viable product within one semester the student needs to follow system engineering approach to break this down into small deliverables; design the experiments meticulously; frame the acceptance test procedures.
Extra Information	
Area	
Project Suitable For EE/ECE/CSE	All

Ethics clearance questionnaire

		Yes	No
Q1	Does this project involve data collection	X	
Q2	Does this project involve utilizing a third-party data set		X
Q3	Does this project utilize machine learning (ML) or artificial intelligence (AI)?	X	
Q4	Does it exceed the minimum risk defined here: Link [Answer is No here if your project does not utilize ML and AI]		X
Q5	Does this project involve external parties, funders, etc		X

Answer the following questions if you answer "Yes" to any of the above questions.

If the answer is “Yes” to Q1, please answer the following questions:

		Yes	No
Q6	Are there humans or animals directly involved in the data collection process or contains any identification information		X

If the answer is “Yes” to Q2, please answer the following questions:

		Yes	No
Q7	Are the third-party data used anonymous (data does not contain human or animal-related information?)		
Q8	Are the third-party data used from an open source?		
Q9	Are the third-party data used from a different research group?		