# Final year project (fyp)

# ABSTRACT SUBMSSION

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| **Supervisor:** | Colin Fitzpatrick | | | | |
| **Programme of study:** | LM118 Electronic and Computer Engineering – General Stream | | | | |
| **Abstract:** | This project was specified in consultation with and partly funded by the Automated Transport and Safety (ATS) department of Analog Devices, Inc. (ADI) Limerick, with a major part of the testing being conducted on University of Limerick (UL) campus. The goal is to use the ADI Demorad 24GHz RADAR platform to measure Cardiopulmonary movement at a distance of 1 meter from the subject with an accuracy of 90% or higher. The first task was to program a control script for this platform which would measure this movement and calculate the heartrate therefrom on the host PC. Once this script proved satisfactory in initial tests, a series of measurements would be carried out in an Anechoic chamber, where the amount of Radio Frequency noise would be minimalized. In the resulting script, 4 digital filters were designed, in the interest of inspecting how well various filters performed when attempting to remove noise due to Heart-Rate Variability. Of the 4 designs, 3 were tested at 2 different resolution settings, one filter was only tested at the lower resolution setting. 3 of the 7 variations proved successful under testing, at best achieving 5% Mean Absolute Percentage Error. | | | | |