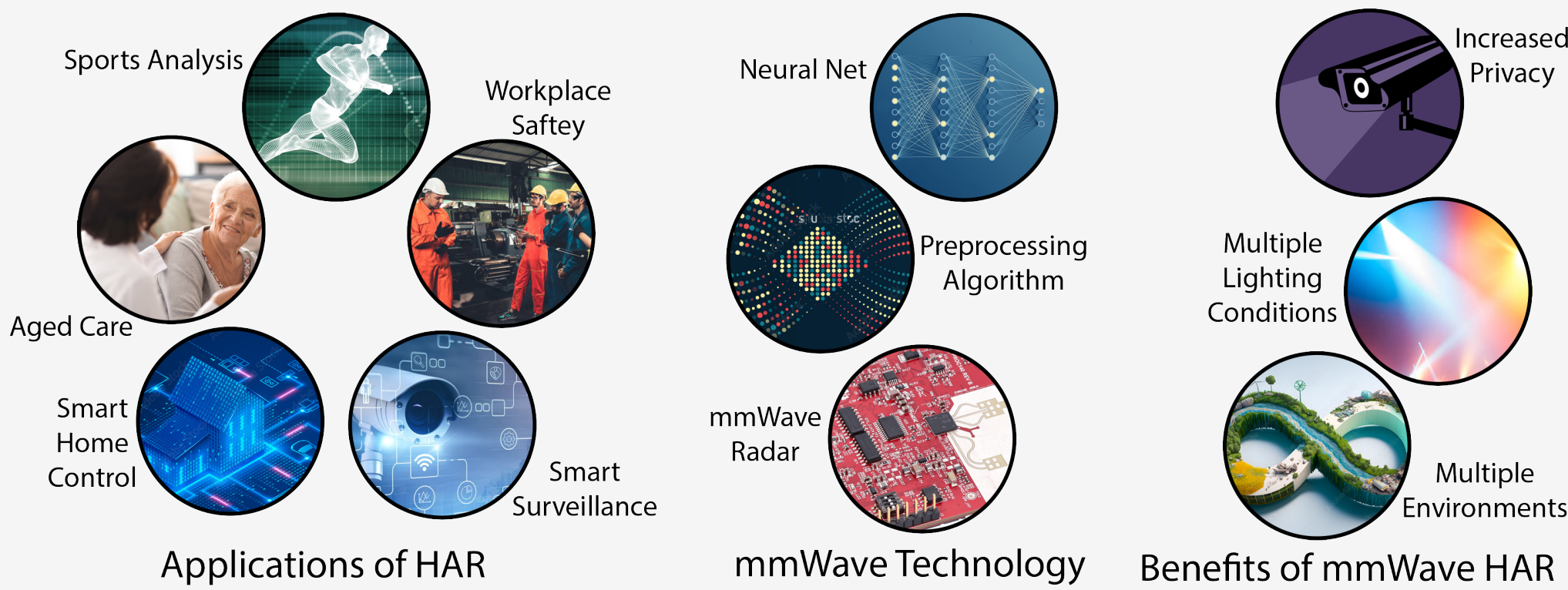


Project 77: Milimeter Wave Radar based Human Activity Recognition

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Background

Human activity recognition is an exciting area of development that allows systems to identify and respond to human actions and behaviour. mmWave radar promises to improve this field with more robust and privacy-focused tech. Our system takes raw data from the radar and passes it through a preprocessing algorithm before classifying the data using an innovative neural network approach.



Research Process

The first steps for this project involved familiarising ourselves with the radar technology. Confidence in the physical tech and the provided software was essential to the research.

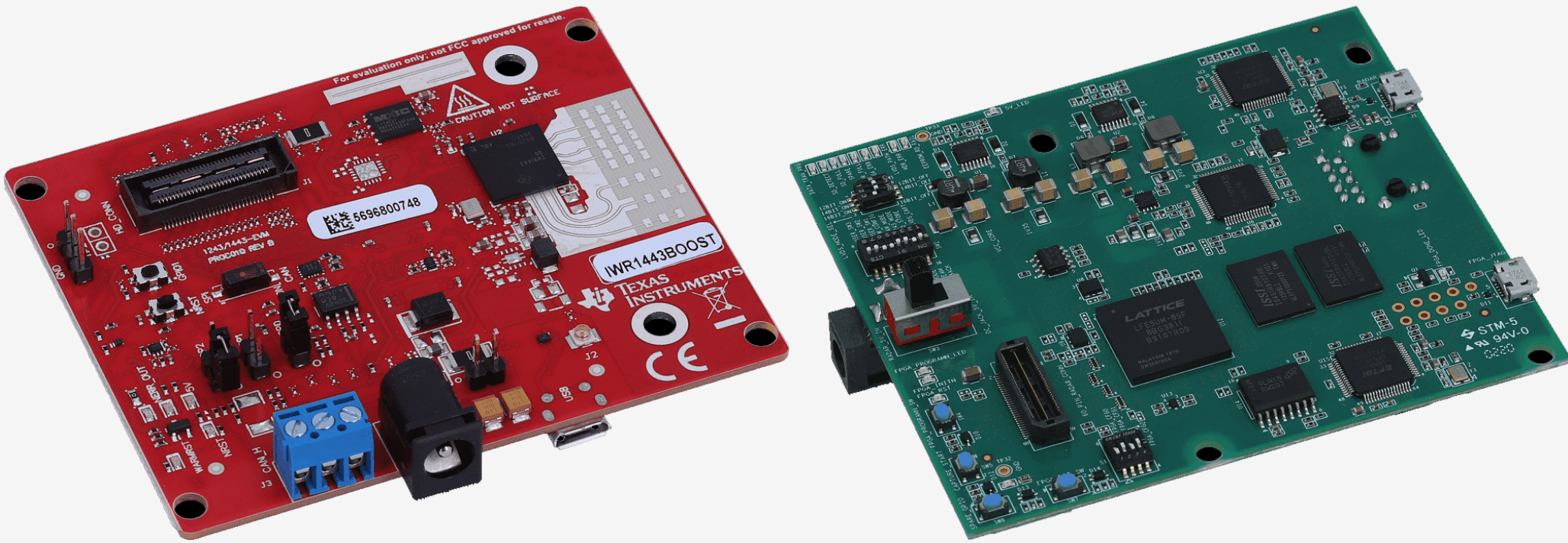
Once familiar with the tools and radar data, we began investigating neural network approaches. During this time, we also created the preprocessing pipeline to transform the raw radar data and submitted an ethics application to begin collecting training data.

When a workable model had been created, training data was collected, and the model was refined to make improvements and investigate various ideas.

Radar Setup

Our radar setup involves an IWR1843 BOOST radar module paired with a DCA1000EVM evaluation board. The DCA1000 allows us to directly access the ADC data from the radar without the module compressing or transforming the data. This provides a greater level of control over how the data is manipulated, tailoring the process precisely to our needs.

The boards are linked with a high-capacity data cable and bolted to a 3D-printed base. This entire assembly is attached to a tripod before being aimed at the recording target.



Model Development

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Results

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Conclusion

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