Sign language is a visual language mostly used by deaf people to communicate. They use hand gestures and facial expression to convey meaning. Technological advancements in AR and machine learning have facilitated automated sign language translation with the use of cameras.

One of the essential components of sign language translation is real-time hand detection. This is a demanding task due to challenges such as variance in viewpoints, intra-class variation, self-occlusion of fingers and complex background settings. Recent advancements in computer vision using deep learning have enabled significant improvements in object detection. Refinements in hardware such as depth-camera to capture 3D information or specialized hardware to accelerate machine learning algorithms are also contributors to these advancements. However, the context of embedded applications bears several limitations that have to be considered. These include low-resolution cameras, limited performance, and low power consumption.

This semester thesis aims to evaluate the feasibility of hand detection for sign language using machine learning on the TurboX SDW4100 development board which comprises a state-of-the-art system on chip (SoC) for wearables.