Deep Learning Acceleration on the Edge

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University of Dublin, Trinity College, 2019

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With the development of intelligent vision systems in today's era, the industry is again moving towards a crossroad where there is an imperative need for further technological advancements and development of more adept algorithms to process computationally intensive applications that can provide a far superior user experience. Some of the leading research fronts in this context are the use of hybrid approaches combining traditional computer vision techniques and current state of the art deep learning processes and the development of AI accelerators that can help in accelerating the deep learning processes. The contribution of this dissertation is a thorough evaluation of the effectiveness of the Intel neural computing sticks as deep learning accelerators on an embedded system (Raspberry-Pi). We explore the state-of-the-art neural network architectures applying them on deep learning tasks of Image Classification and Object Detection. Three different configurations combining the embedded system, neural networks and the deep learning accelerators are incorporated in this dissertation. With growing research into low powered embedded intelligence devices, this work shows the capability of the deep learning accelerators and their potential for application in other Deep Learning research areas for the future.