Many articles have been written on the topic of obstacle detection, some of these, such as [1], uses mobile devices, which also use algorithms to detect the presence of obstacles, which while not being the focus of the proposed project, this work offers interesting insights into the used of potential sensors, such as proximity sensors. Others, such as [2] offer insights into how machine learning can be used to carry out Real-Time Ranging and Localisation and discusses a few different approaches to labelling data which are interesting and offer useful background to the proposed work. This work also discussed the performance of several classification models which was very insightful.

The proposed work’s goal is to access the feasibility of a DL/ML model running on what is referred to as a “constrained device”. Commonly listed constraints would be the availability of onboard memory, and a limited power source. Another common tern for a constrained device would be devices that are on “the edge”. The work presented in [3] offers a wide-ranging discussion on topics like the future of ML at the edge, as well as a discussion on ML/DL algorithms, it also presents a discussion on how ML can be brought to the edge, discussing architectures and hardware, and wireless standards for AI-enabled devices. As such, the work in [3] provides a wide ranging and extremely useful background to the topic of ML/DL on constrained devices. Another review type paper is [4], which provides an extensive discussion on classification models and their use in IoT systems as well as discussing the hardware requirements for embedded ML.

The work presented in [5] used a thermal imaging camera and provides some useful insights into data collection as well as a discussion on the system architecture. The work then goes on to discuss the use of a form of CNN and highlighted some of the problems encountered when training on the AlexNet network – specifically lighting, which may be an issue for the work proposed here, depending on sensor type, and as such, is something to keep in mind.

[1] Khairul Azim Bin Za’aba and Lau Bee Theng, “Edge Based Obstacle Detection Model Focused on Indoor Floor-Based Obstacles,” in *2019 IEEE 9th Symposium on Computer Applications & Industrial Electronics (ISCAIE)*, 2019, pp. 202–207. doi: 10.1109/ISCAIE.2019.8743866.

[2] R. Sattiraju, J. Kochems, and H. D. Schotten, “Machine Learning Based Obstacle Detection for Automatic Train Pairing,” Nov. 2018, [Online]. Available: http://arxiv.org/abs/1811.12228

[3] M. Merenda, C. Porcaro, and D. Iero, “Edge machine learning for ai-enabled iot devices: A review,” *Sensors (Switzerland)*, vol. 20, no. 9, May 2020, doi: 10.3390/s20092533.

[4] F. Samie, L. Bauer, and J. Henkel, “From cloud down to things: An overview of machine learning in internet of things,” *IEEE Internet Things J*, vol. 6, no. 3, pp. 4921–4934, Jun. 2019, doi: 10.1109/JIOT.2019.2893866.

[5] S. Quinn *et al.*, “A Thermal Imaging Solution for Early Detection of Pre-ulcerative Diabetic Hotspots; A Thermal Imaging Solution for Early Detection of Pre-ulcerative Diabetic Hotspots,” *Annu Int Conf IEEE Eng Med Biol Soc*, pp. 1737–1740, 2019, doi: 10.1109/EMBC.2019.8856900.