

Network Architecture Search (NAS)

Daniel Duclos-Cavalcanti

Abstract—There is no question regarding the impact, that deep learning has brought onto society and science. Additionally, there has been significant progress lately within the field and it's application onto a variety of tasks, largely due to either improvements to existing architectures or the creation of novel ones altogether. The process of developing state of the art architectures is not a simple one and involves not only a large deal of domain expertise, but also intuition and some level of trial and error. This is not ideal as it is both time consuming and error-prone. Therefore the motivation behind the field of *neural architecture search* and its different methods has grown remarkably within the last 5 years. The challenges involved in NAS are many and among them, there is a concern with computational costs and time feasibility. This however becomes a different problem within the context of *tinyML*, which is an expanding field at the intersection of machine learning and embedded systems. Due to the resource constrained conditions involved in most of the embedded devices and the state of the art techniques employed to reduce the size and complexity of the deployed models, the stages concerning training, validation and inference are substantially faster in comparison to the more complex models used in the research of network architecture search.

REFERENCES

- [1] M. Wistuba, A. Rawat, and T. Pedapati, "A survey on neural architecture search," *arXiv preprint arXiv:1905.01392*, 2019.

I. INTRODUCTION

The success of deep learning has also created an equal demand for *architecture engineering*. Given the increasing complexity of this process and the still existing susceptibility to errors during the

II. STATE OF THE ART

In this section an analysis of the available literature on the topic is done. This section may be split or subdivided into several sections or subsections.

A. Subsection Heading Here

Subsection text here.

1) *Subsubsection Heading Here*: Subsubsection text here.

III. CONCLUSION

Put the conclusions of the work here. The conclusion is like the abstract with an additional discussion of open points. Look a citation [1] here.