

1 Appendix A - Equalization of ResNets

ResNet networks feature skip connections between layers. This results in element-wise addition between tensors as shown in Figure A1. When one of these tensors are scaled, the other one must be scaled with the same factor. Thus we denote these layers as matched layers. In Figure A1, for examples, CONV 1, 3, 5, and 7 are all matched together.

The matched layers add a constraint to the equalization algorithm - all the matched layers must have the same scale. We suggest a simple modification to the equalization algorithms to address this. When the algorithm scales one of the matched layers, it first calculates the scaling of all the matched layers. The actual scaling (the function *scaleLayer* in algorithms 1 and 2) is done by a channel-wise minimum between the scales of all the matched layers. This method ensures that the extremum values of all the matched layers will remain unchanged.

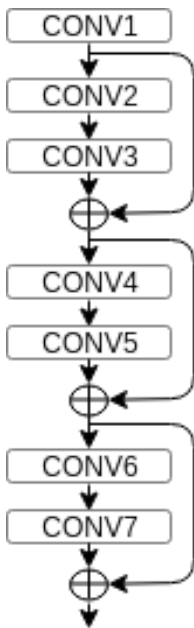


Figure A1: ResNet skip connections example