

# Fast and Accurate Lightweight Model

## for Real-Time Tiger Detection in The Wild

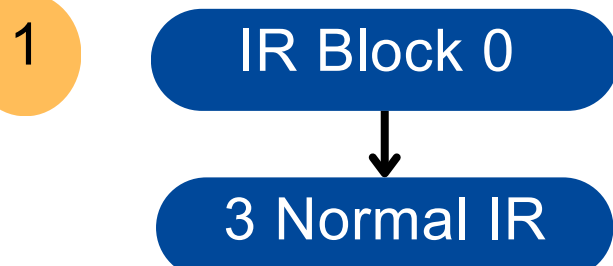
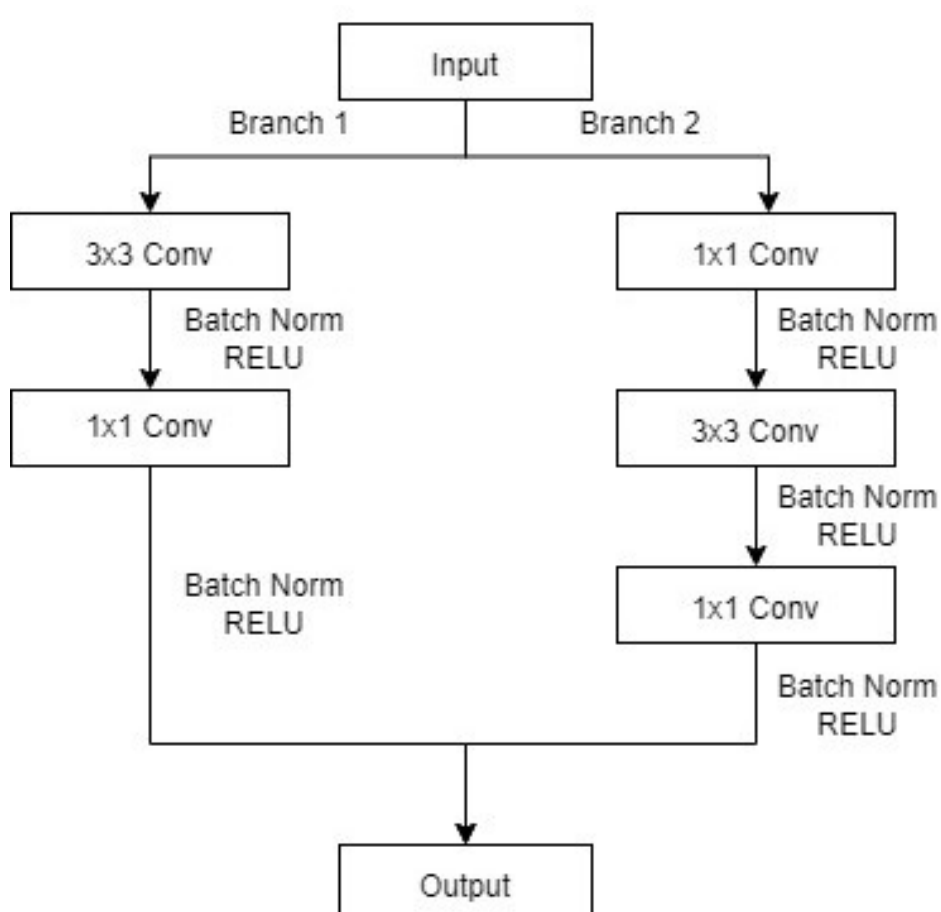
Student: Ong Chong Jun, Gregory

Supervisor: A/P Deepu Rajan

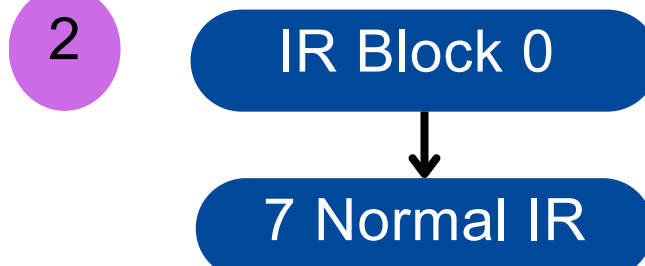
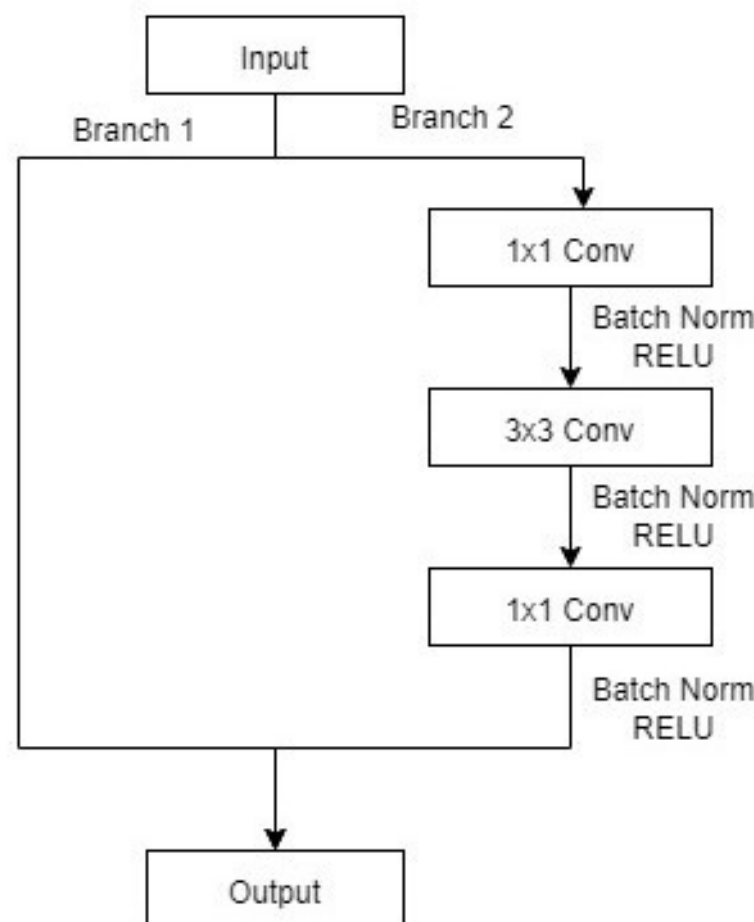
### Project Objectives:

The central objective of this report is to present an adapted backbone structure that outperforms state-of-the-art models such as MobileNetV2 and ShuffleNetV2 when employed as the backbone, specifically in terms of precision and inference speed, all while being mindful of model complexity.

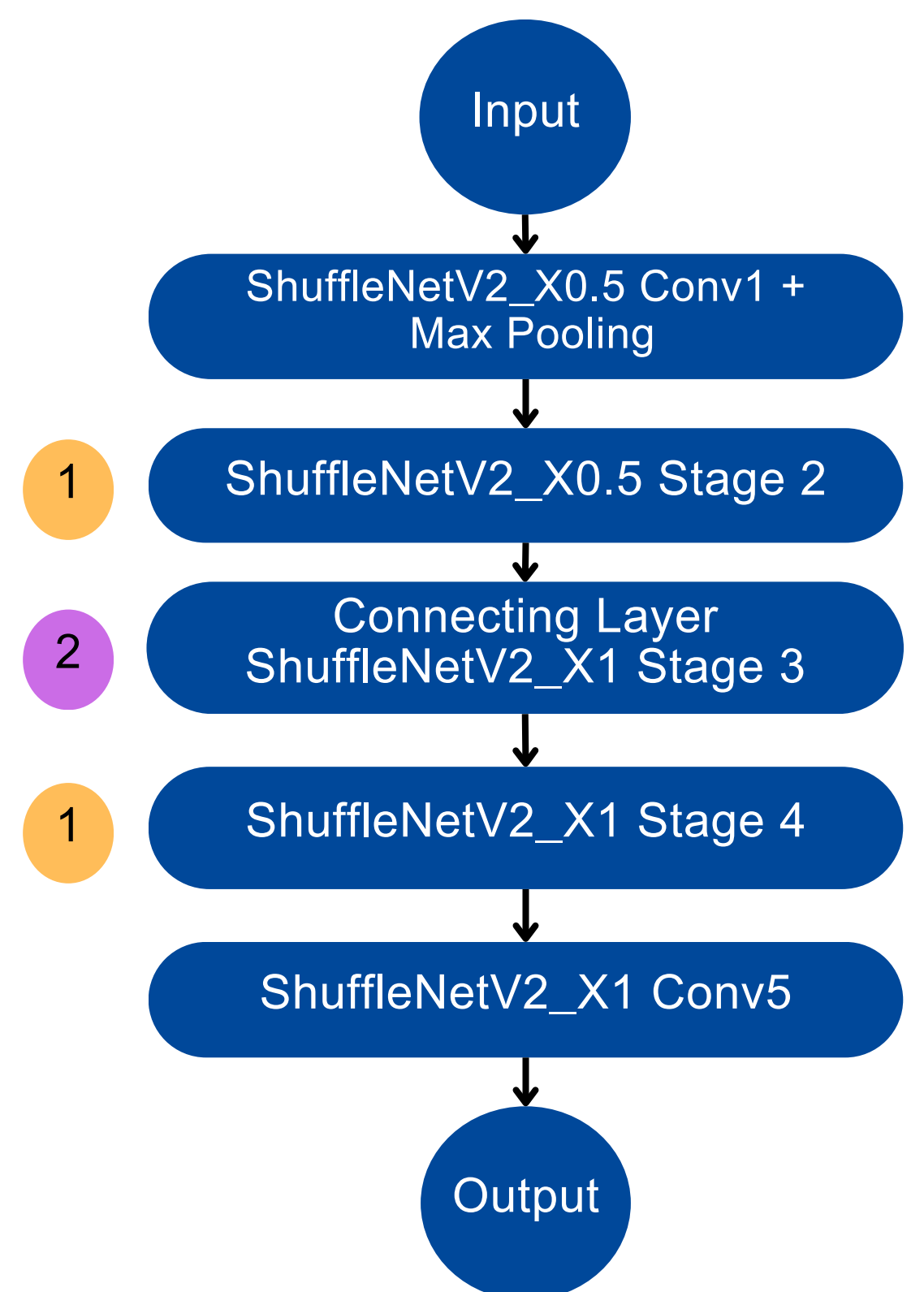
#### Inverted Residual Block 0



#### Normal Inverted Residual Block



#### Proposed Backbone Architecture "ShuffleNetV2\_X0.75"



This is selected as the optimal backbone configuration after extensive experimentation as it gives the best efficiency (precision per unit inference time) compared to other configurations.

### Experimental Results

Model	MobileNetV2	ShuffleNetV2_X1	ShuffleNetV2_X0.75 (Proposed)
Inference Time (ms)	61.4	58.9	33.0
Average Precision (IoU=0.50)	0.482	0.656	0.524
FLOPs	300M	146M	107M
Number of Parameters	3.4M	2.3M	2.0M
Efficiency (Precision / Inference Time)	0.0079	0.0111	0.0159

