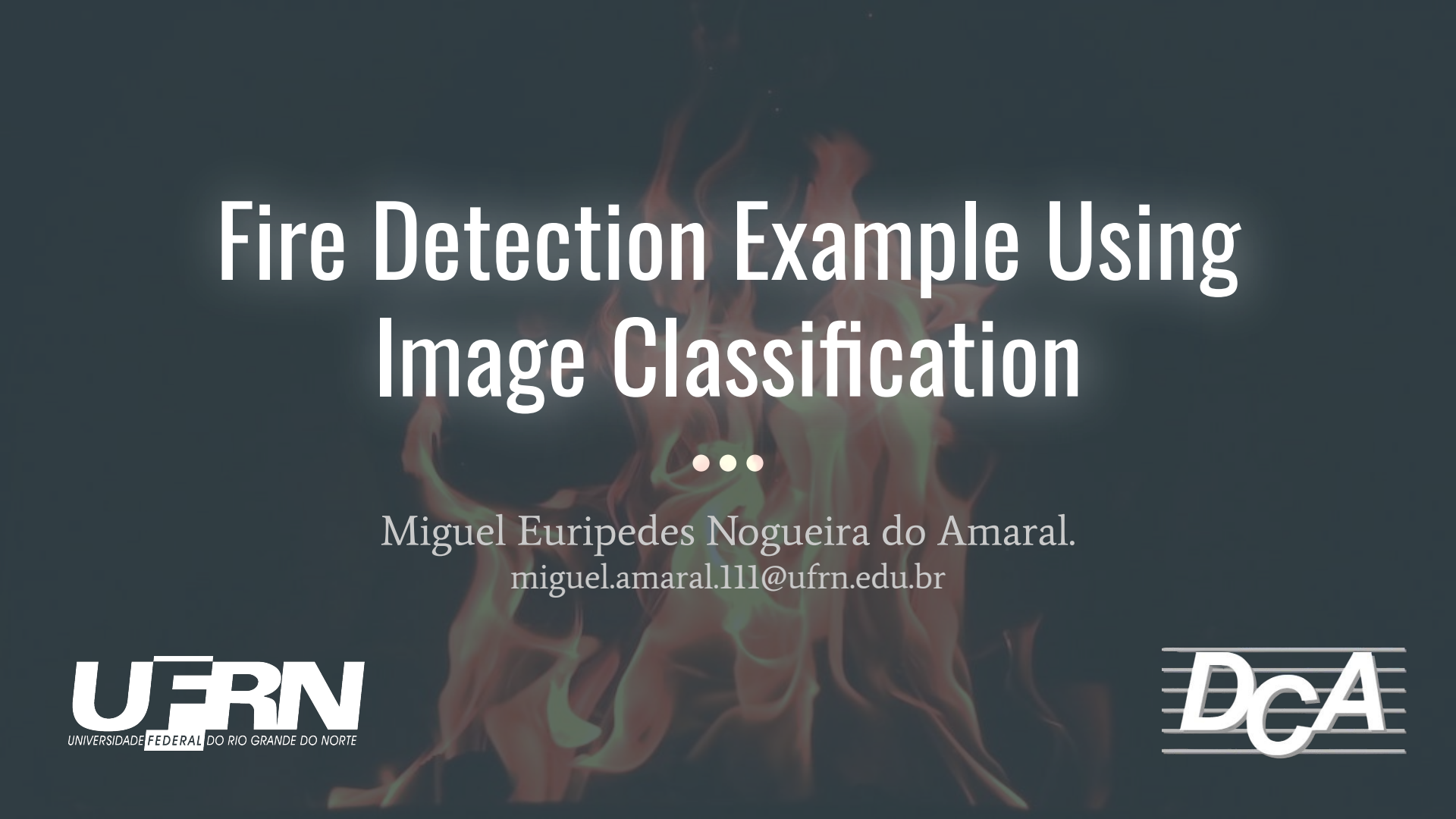
Fire Detection Example Using Image Classification



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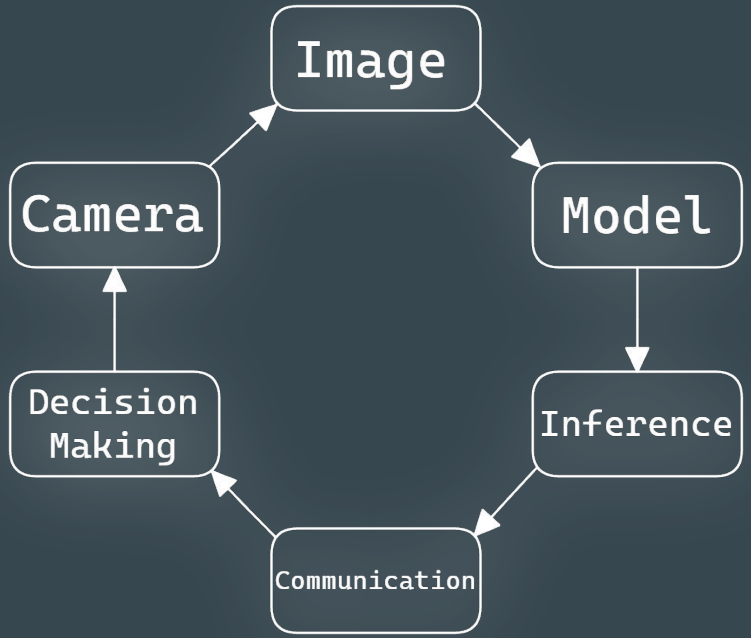
DCA

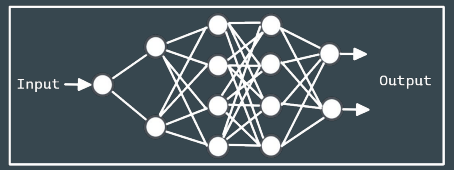
Contextualização

- Inspiration:

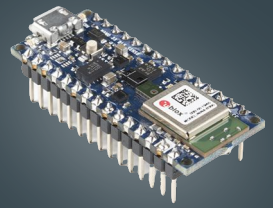


- Objective/Goal:

Create a Model:

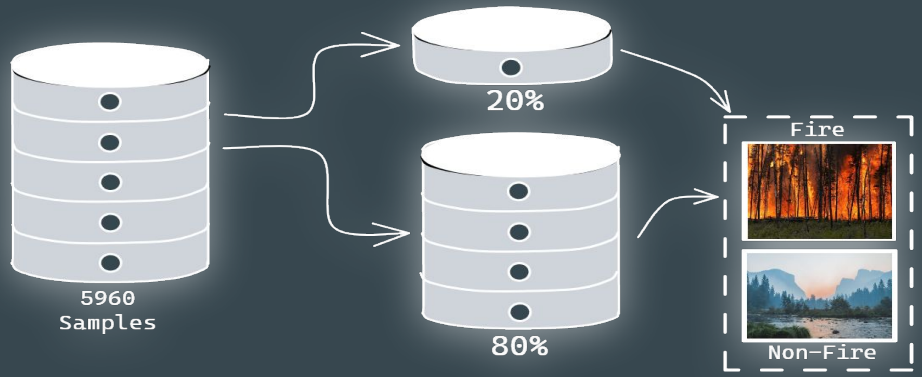


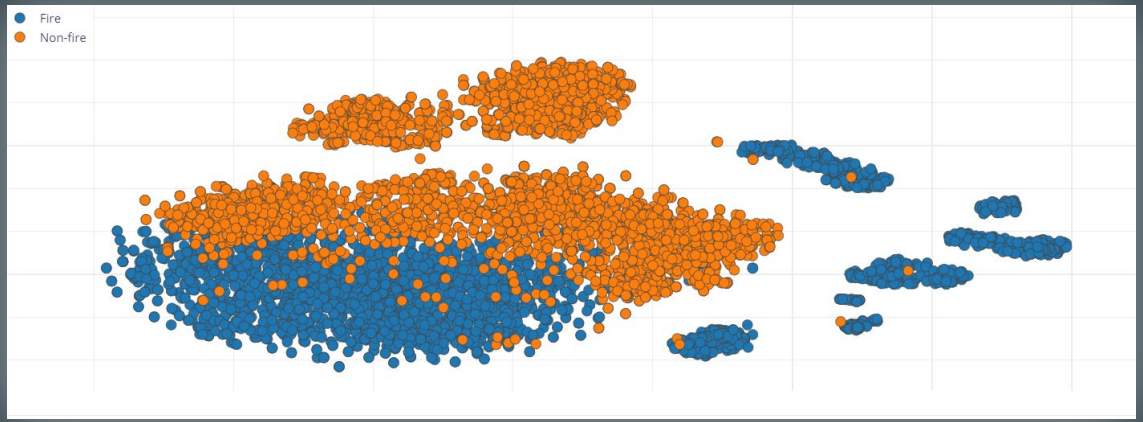
On board implementation:



Data

- Train/Test Split performed
- Data Distribution:

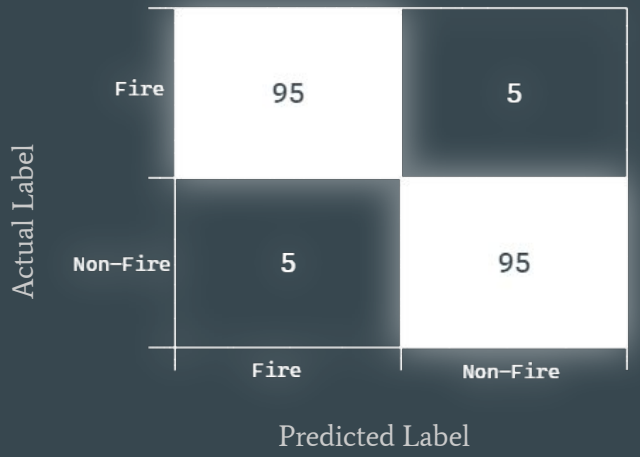




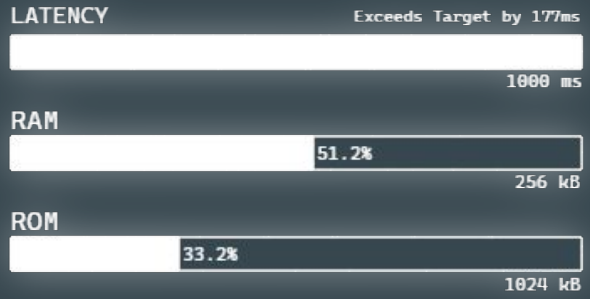
Model

First

- MobileNetV1 96x96 0.25
- Final Layer:
  - 128 Neurons;
  - 0.5 Dropout;
- Training Accuracy: 95.3%



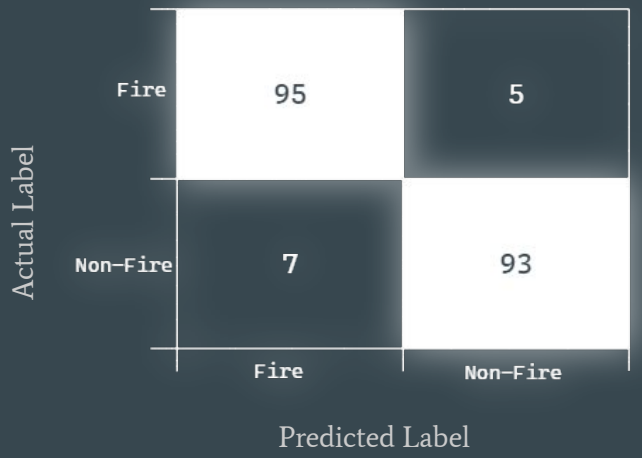
On device Performance:



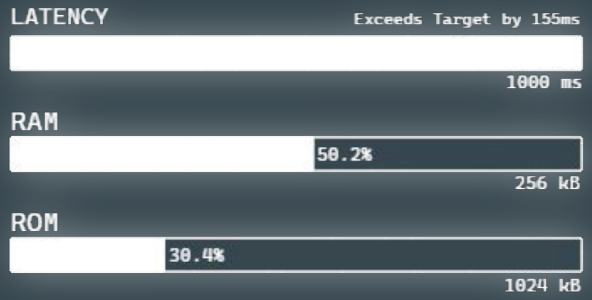
Model

Final

- EON Tuner
- MobileNetV1 96x96 0.25
- Final Layer:
  - 16 Neurons;
  - 0.5 Dropout;
- Training Accuracy: 94%



On device Performance:



Results

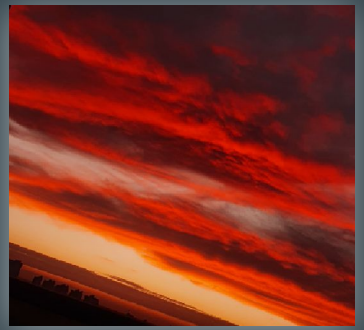
First Model:

Fire: 2%

Non-Fire: 98%

Fire: 67%

Non-Fire: 33%



Fire: 0%

Non-Fire: 100%

Fire: 13%

Non-Fire: 87%

Fire: 36%

Non-Fire: 64%

Fire: 75%

Non-Fire: 25%

Results

Final Model:

Fire: 85%

Non-Fire: 15%

Fire: 64%

Non-Fire: 36%

Fire: 10%

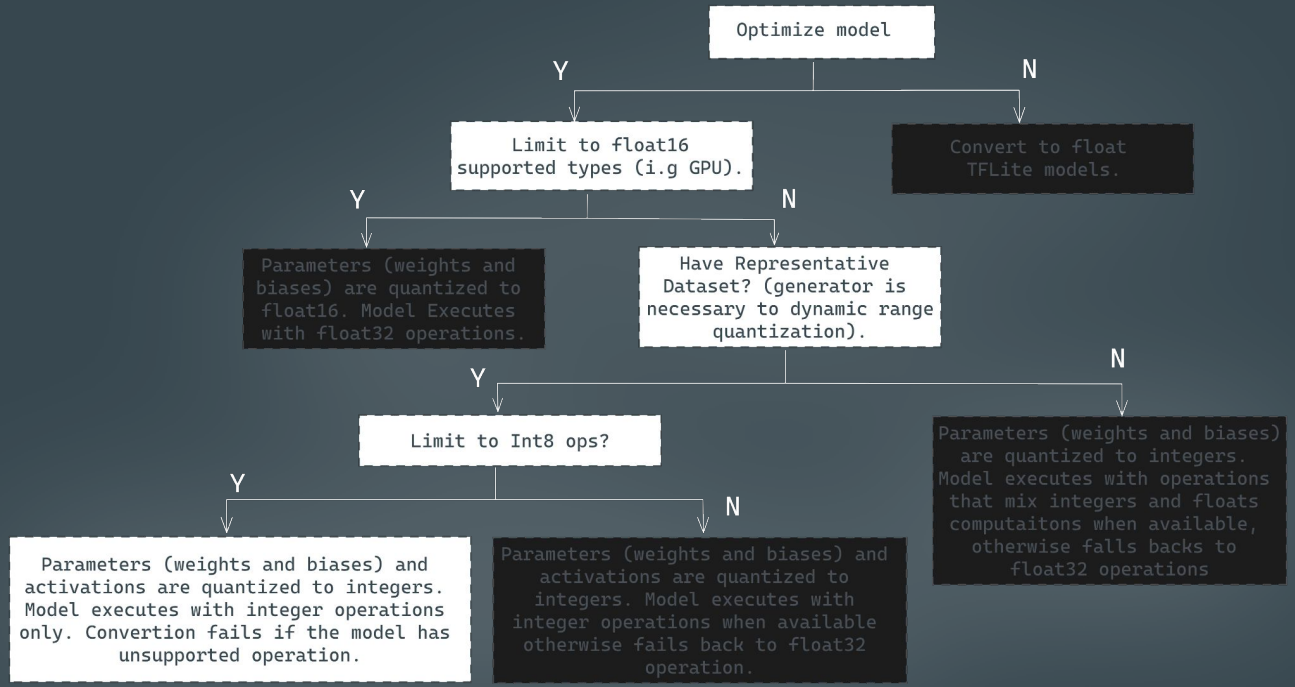
Non-Fire: 90%

Fire: 0%

Non-Fire: 100%

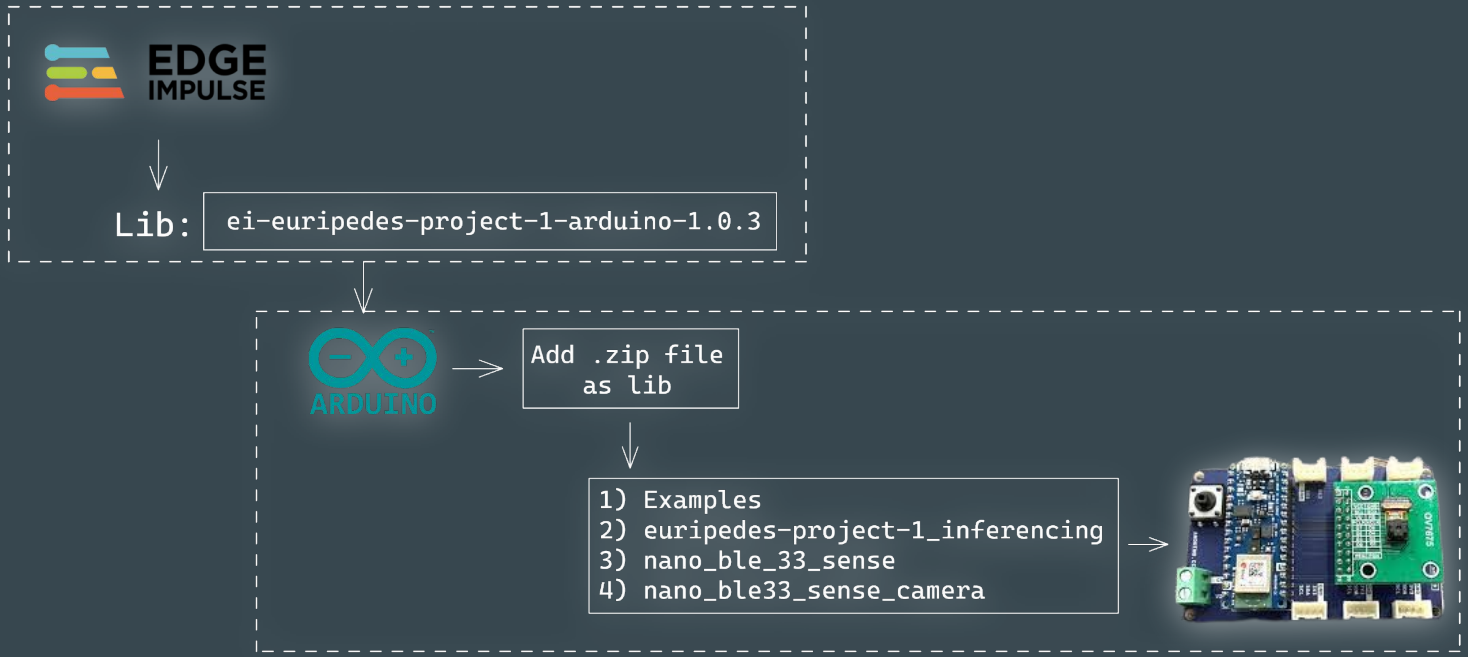
Quantization and Deployment

- Int8 quantized Model.



Quantization and Deployment

- Downloading and deploying:



Thank you for your attention!

Let’s test it on the board!