Pabla Oreskovic

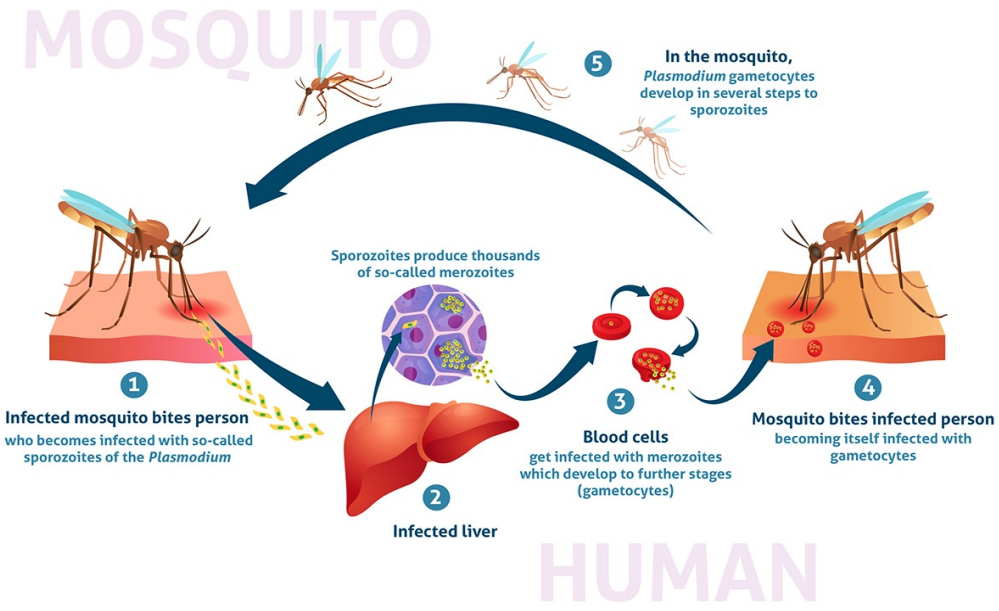
Malaria Detection

PROFESSIONAL EDUCATION

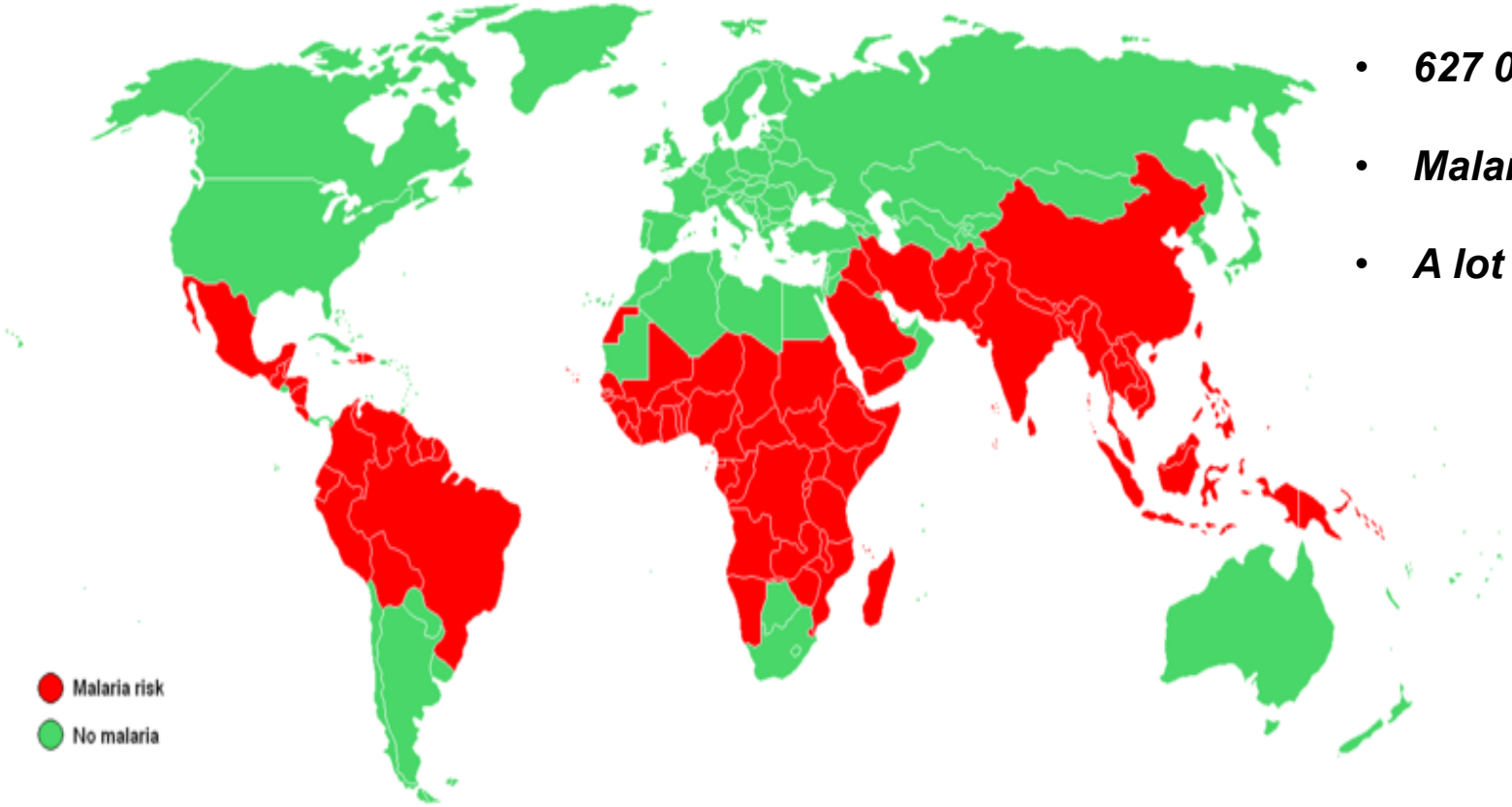
The traditional ways of detecting malaria are slow

Requires the expertise and concentration of a pathologist and a microscope

Build the machine learning model using Convolutional Neural Networks to automatize malaria detection



Problem and Solution

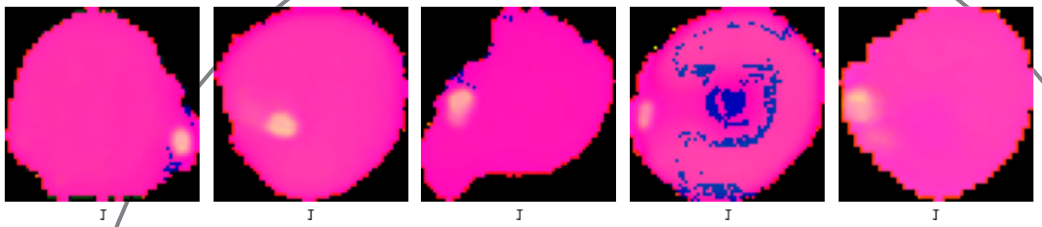


- *627 000 malaria deaths worldwide in 2020*
- *Malaria is one of the world's biggest killers*
- *A lot of victims of this deadly disease are children*

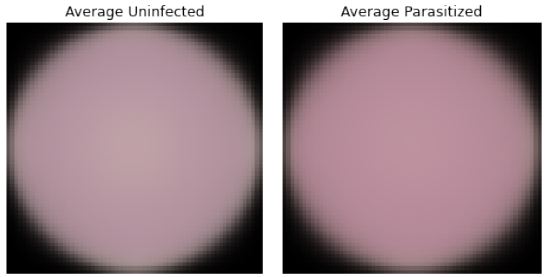
Malaria in the world

Data processing

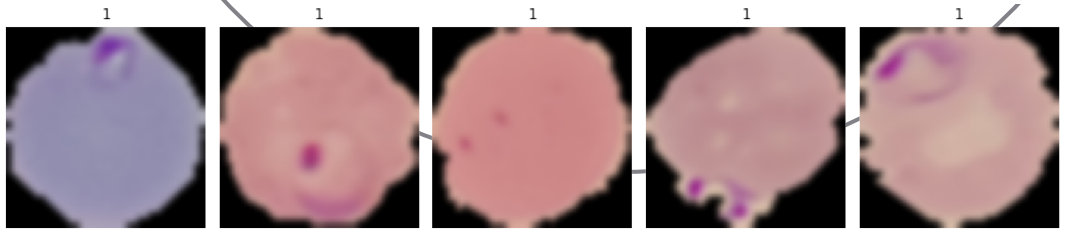
- *Converting RGB to HSV*

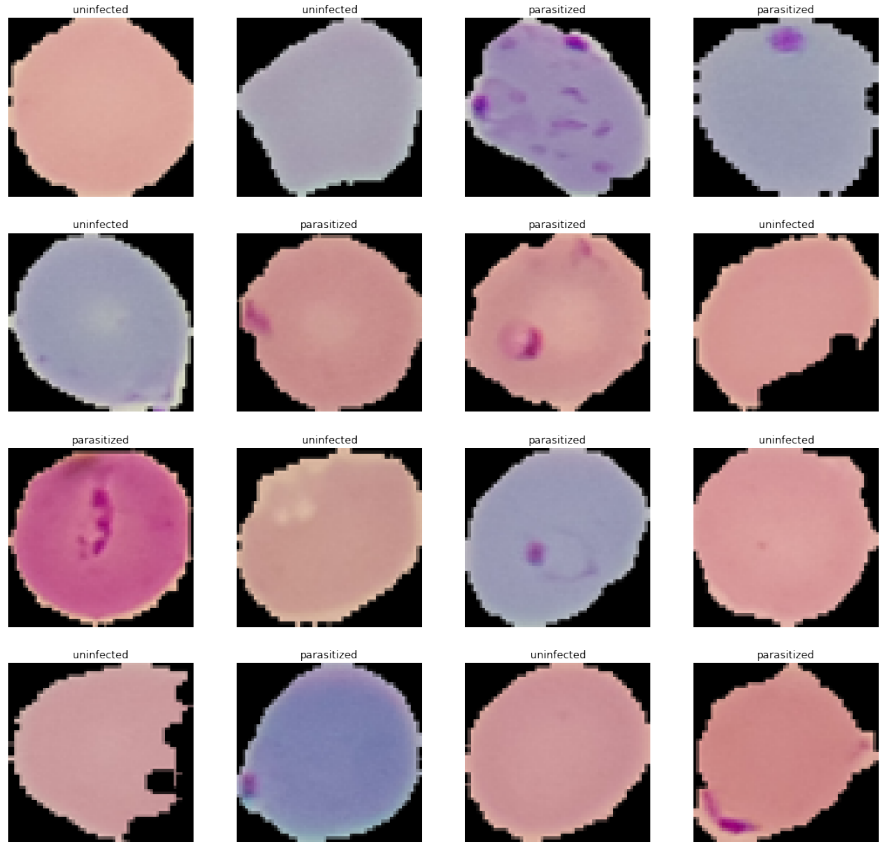


- *Mean image*



- *Gaussian Blurring*





PROFESSIONAL EDUCATION

Data Processing

- ***Base model***
- ***Model 1***
- ***Model 2 with Batch Normalization***
- ***Model 3 with data Augmentation***
- ***Pre-trained model VGG16.***

False Negatives

Statistical Metrics:

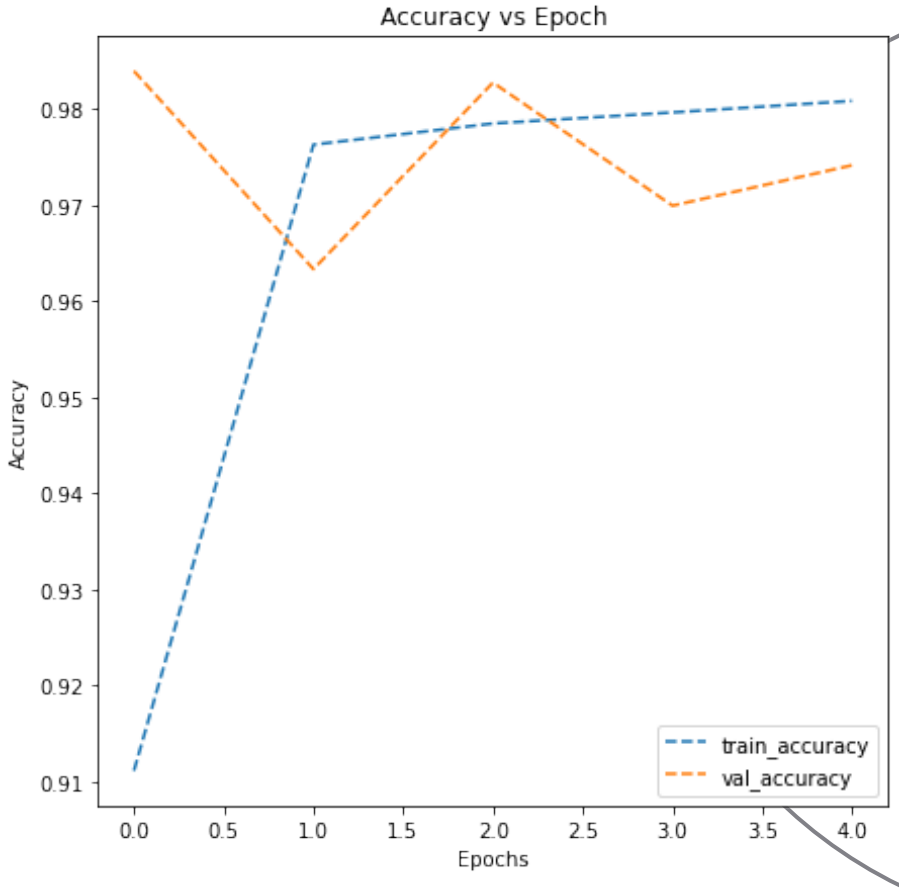
- ***Test accuracy***
- ***Accuracy***
- ***Recall***
- ***Precision***
- ***F1 score.***

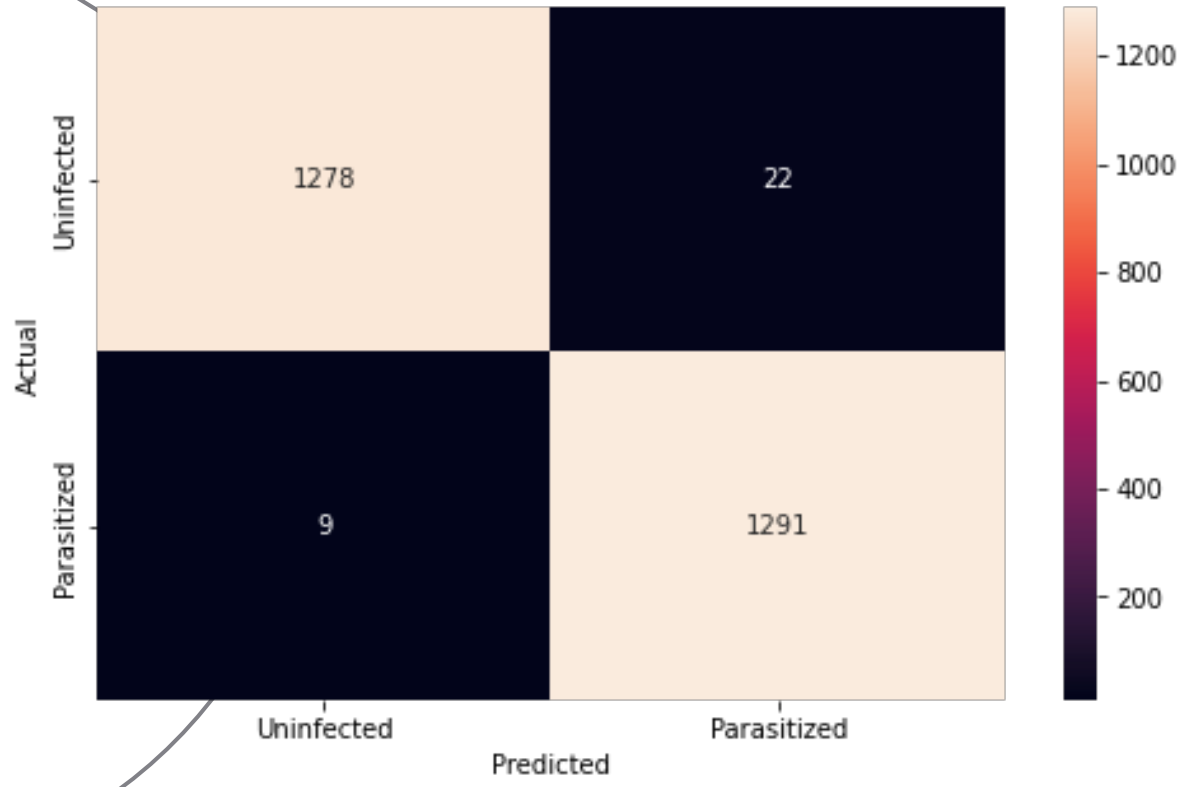
	Test accuracy	Precision	Recall	F1	Accuracy	False Negative
Base Model	97%	97%	98%	98%	98%	33
Model 1	98%	99%	98%	99%	99%	9
Model 2	98%	99%	98%	99%	99%	8
Data Augmentation	97%	97%	99%	99%	98%	44
VGG16 Model	90%	97%	83%	89%	90%	30

The Models and some numbers

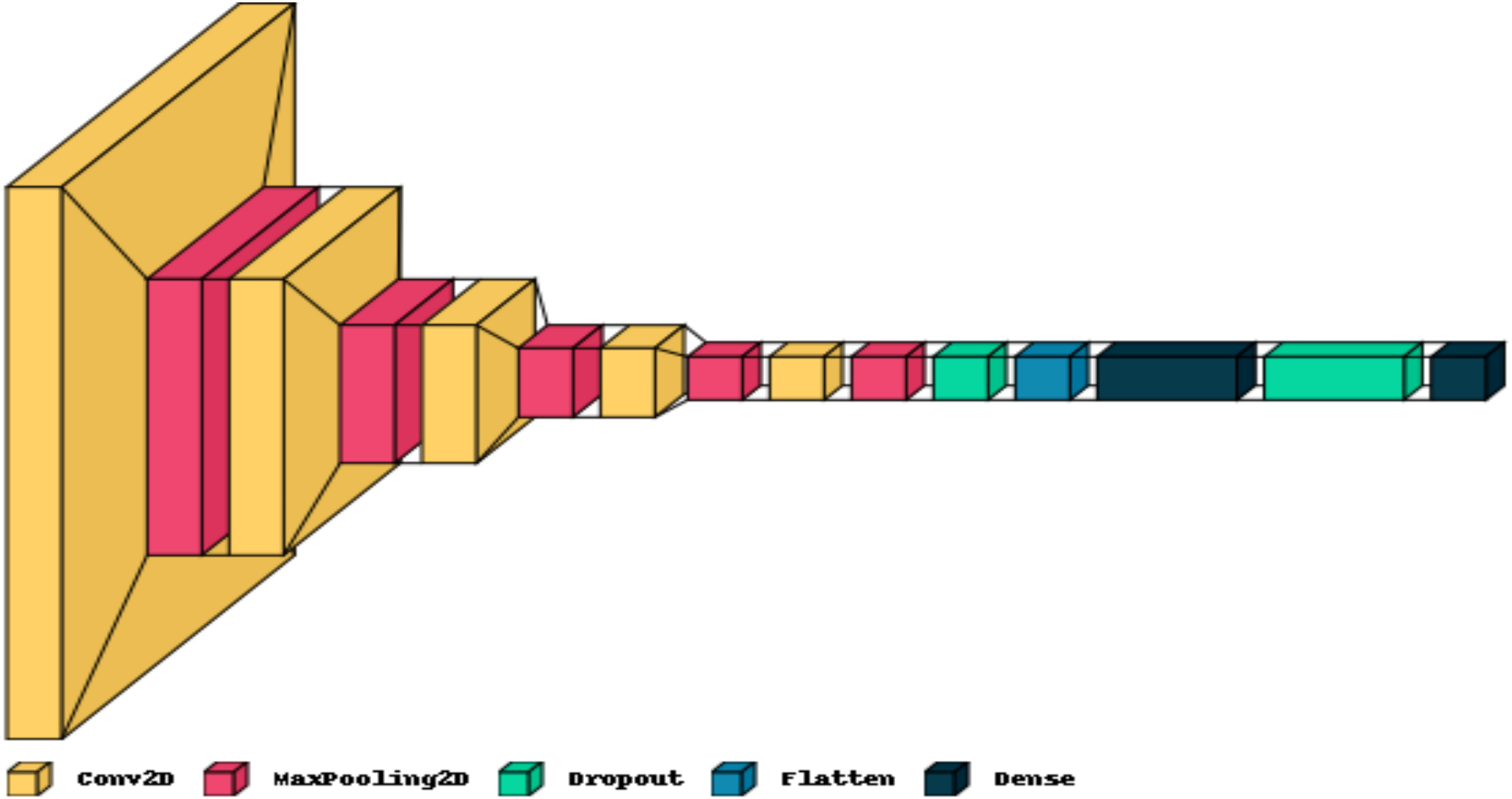
Proposed Model

- *98% Test Accuracy*
- *99% Precision*
- *9 False Negatives*
- *No overfitting*





PROFESSIONAL EDUCATION



Model's **Architcture**

- *Cheaper to build and simple to use because of its light architecture*
- *Model could be used where getting medical help is not easy to get*

- *Potential clients*

- *Keep on training the model and optimizing it – making its performance better.*
- *Research about technologies available in the third world countries*

- *Good performance*
- *Further processing and cleaning the data*

Implementation and use

Thank you

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