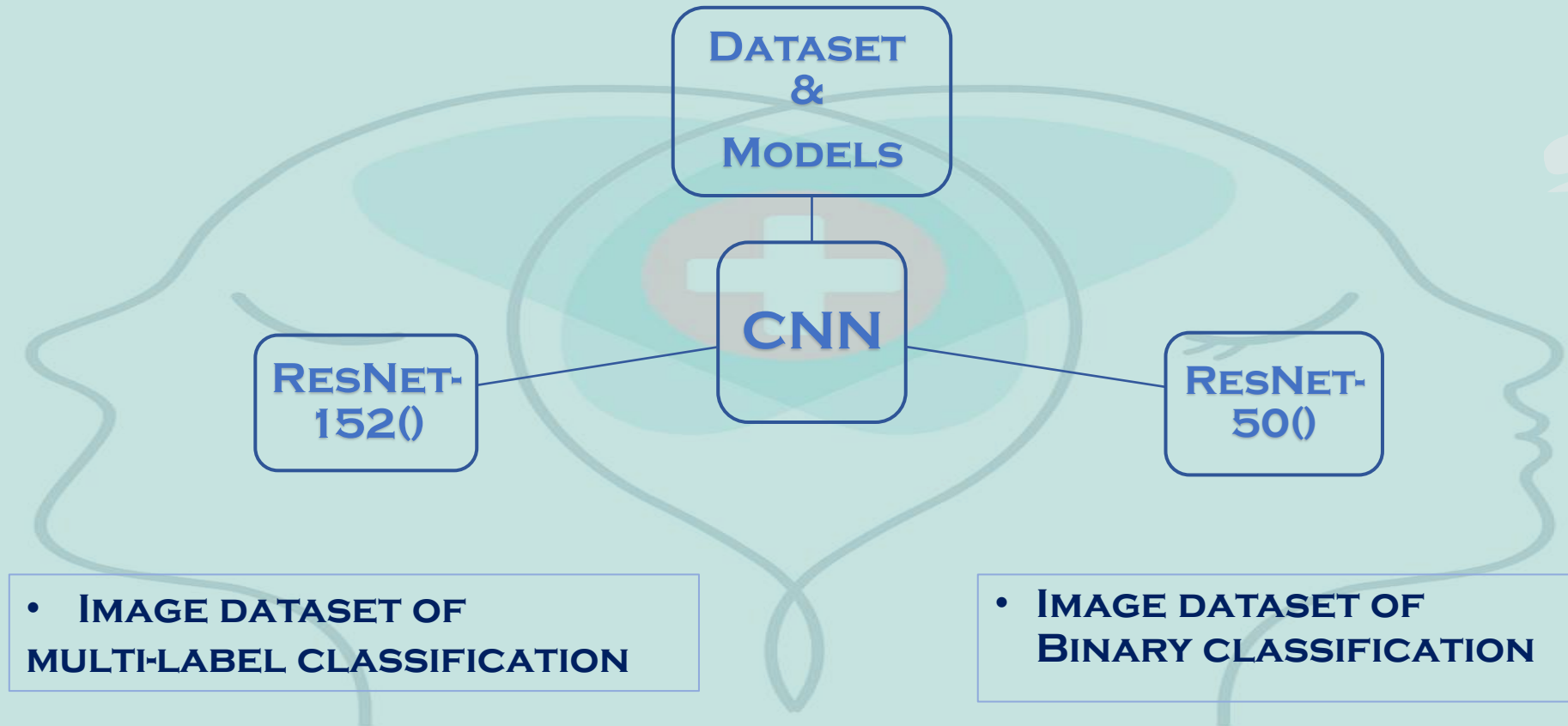




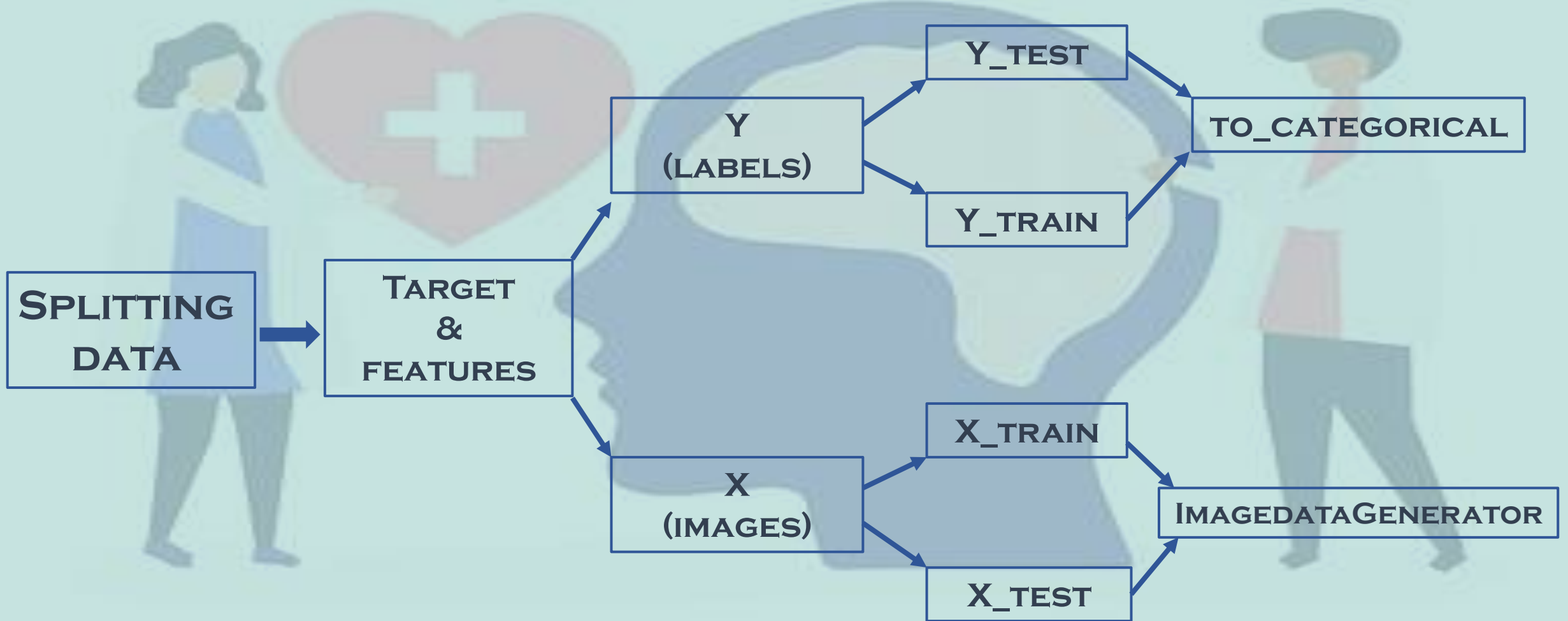
BRAIN TUMOR DETECTION

DEEP LEARNING PROJECT

BY: SHAHAD ABDULSALAM



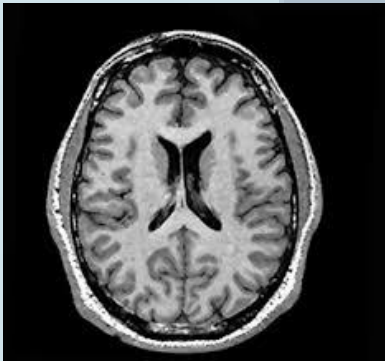
PREPROCESSING



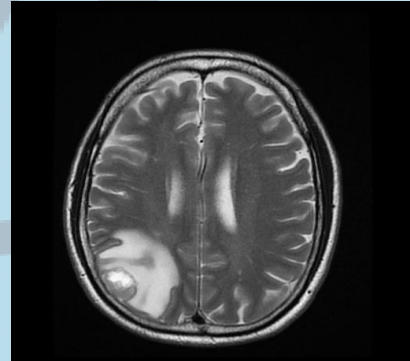
FIRST: BRAIN TUMOR PRESENCE

BINARY CLASSIFICATION

NO TUMOR
CLASS 0

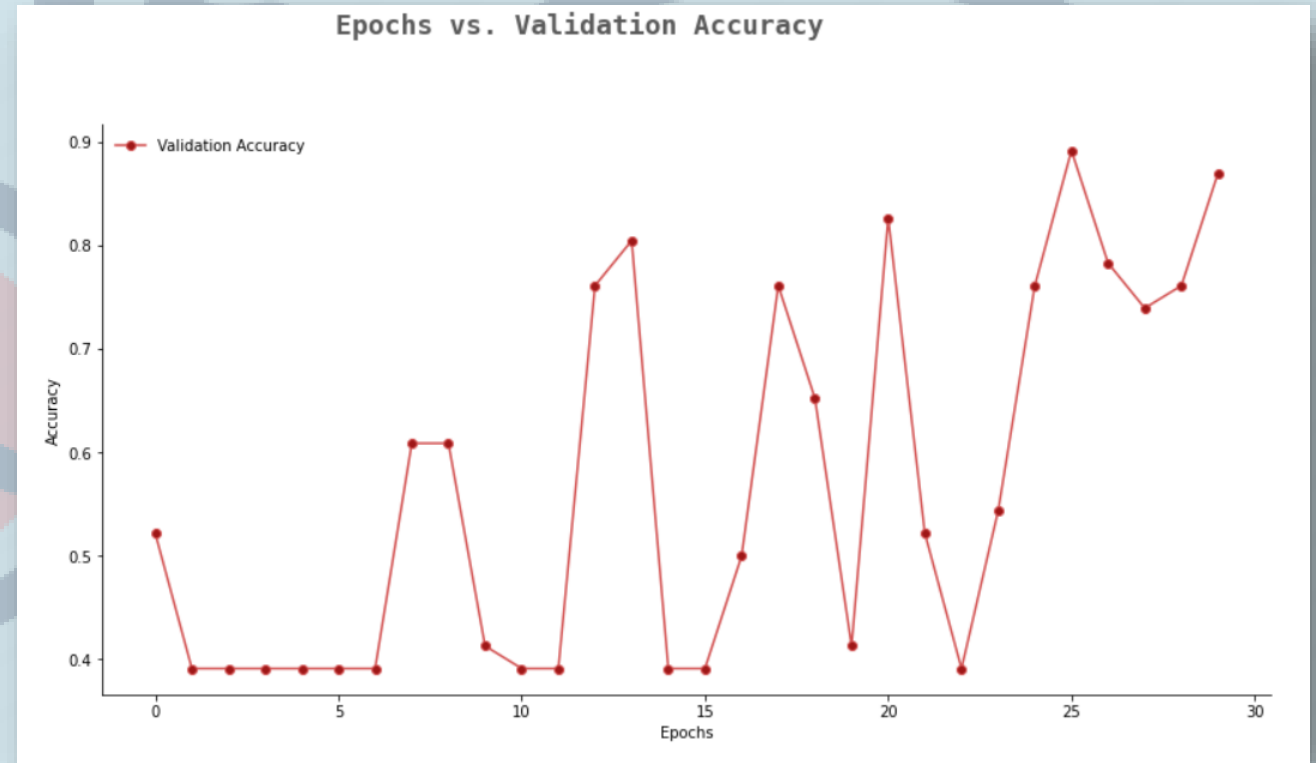


TUMOR PRESENT
CLASS 1



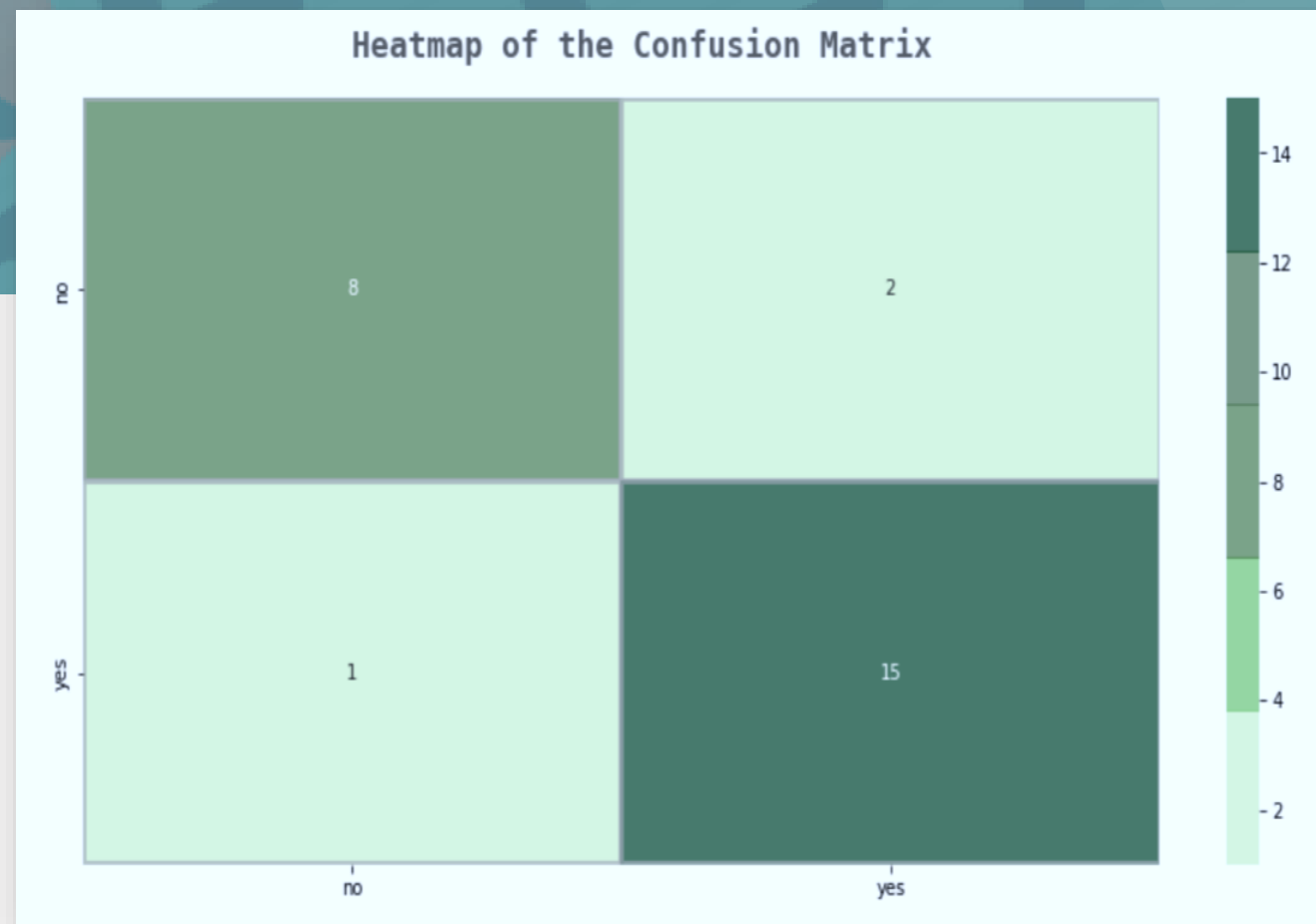
RESNET-50() MODEL

- LOSS [**BINARY_CROSSENTROPY**]
- OPTIMIZER [**ADAM**]
- METRICS [**ACCURACY**]
- EPOCHS [**30**]
- VALIDATION SPLIT [**0.2**]
- CALLBACKS:
 - **MODEL CHECKPOINT()**
 - **REDUCE LEARNING RATE()**



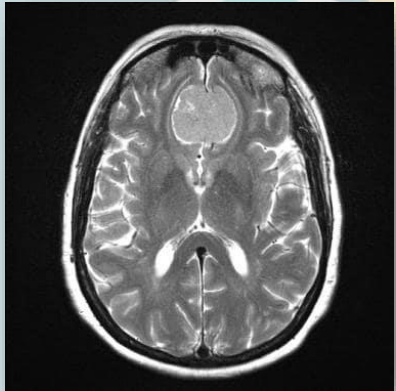
CONFUSION MATRIX OF BINARY CLASSIFICATION

CLASS\METRICS	PRECISION	RECALL	F1
CLASS 0 (NO TUMOR)	0.89	0.80	0.84
CLASS 1 (TUMOR PRESENT)	0.88	0.94	0.91



RESULTS

TEST IMAGE



**MRI IMAGE OF MENINGIOMA
TUMOR**

PREPROCESSING

RESHAPE
(128,128)

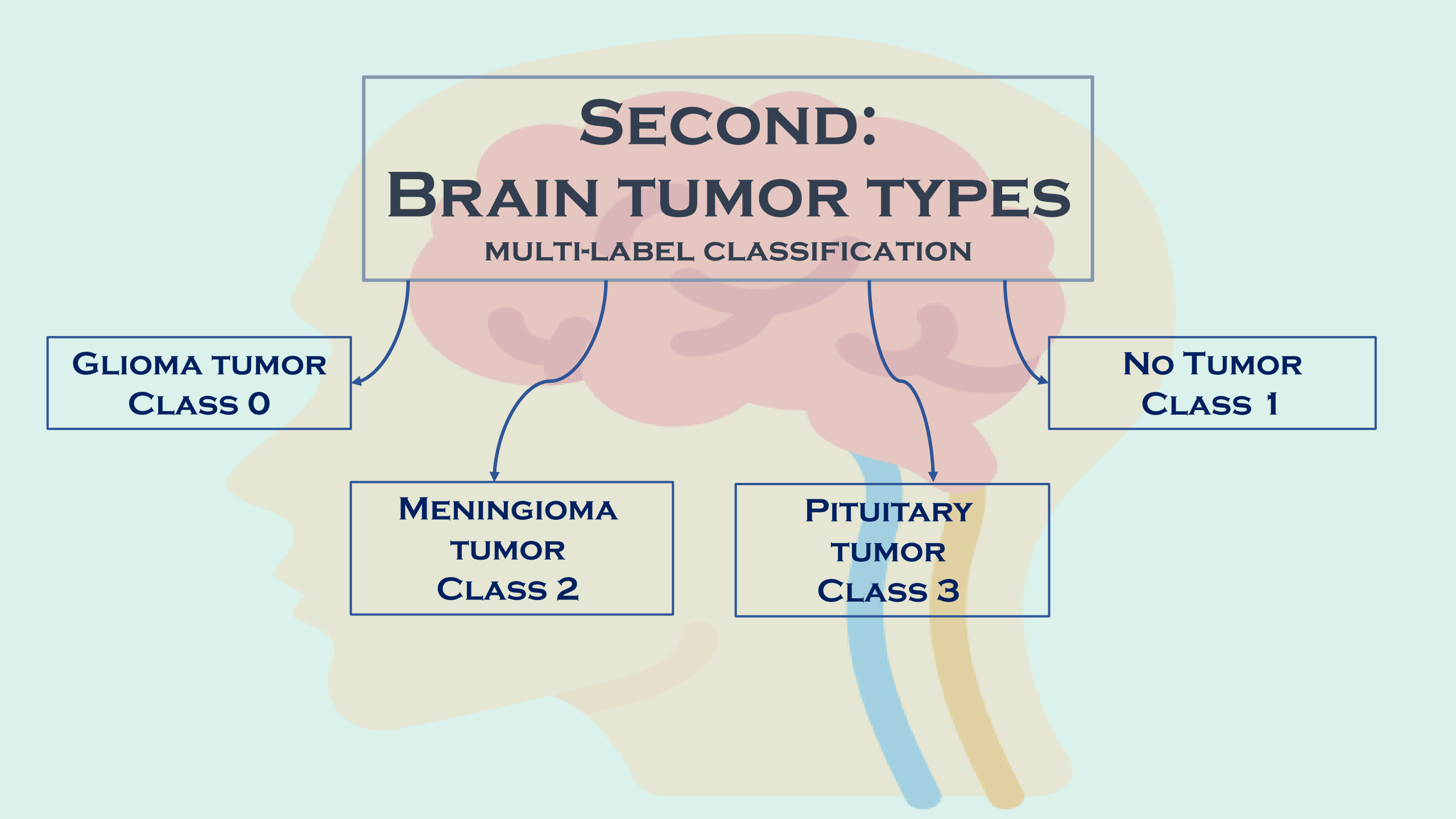


NUMPY ARRAY

BRAIN TUMOR PRESENCE
MODEL RESULTS

```
tumor_presence(test_image)
```

Tumor present



The diagram features a stylized human head in profile, facing left, with a light orange background. Inside the head, a pink brain is visible. A central box at the top contains the title 'SECOND: BRAIN TUMOR TYPES' and the subtitle 'MULTI-LABEL CLASSIFICATION'. Four arrows point from this central box to four separate boxes: 'GLIOMA TUMOR CLASS 0' on the left, 'MENINGIOMA TUMOR CLASS 2' at the bottom left, 'PITUITARY TUMOR CLASS 3' at the bottom right, and 'No TUMOR CLASS 1' on the right. The background is a solid light blue.

SECOND: BRAIN TUMOR TYPES

MULTI-LABEL CLASSIFICATION

**GLIOMA TUMOR
CLASS 0**

**MENINGIOMA
TUMOR
CLASS 2**

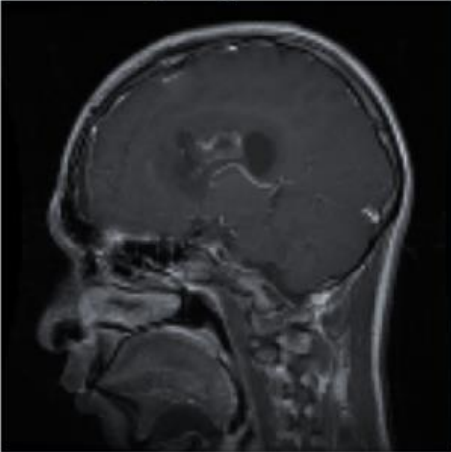
**PITUITARY
TUMOR
CLASS 3**

**No TUMOR
CLASS 1**

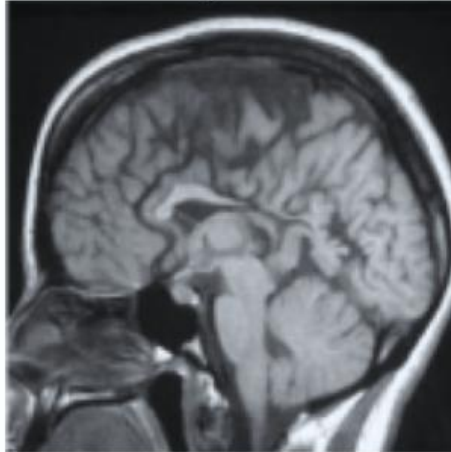
SAMPLE IMAGE OF EACH LABEL

Sample Image From Each Label

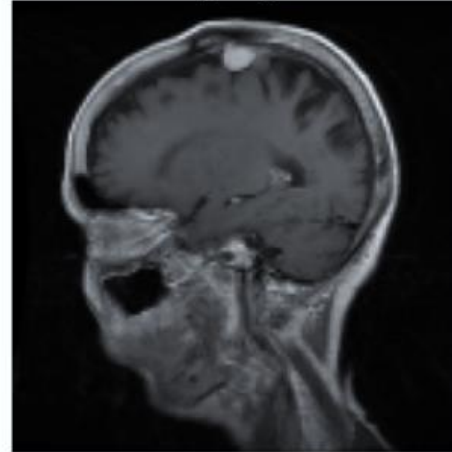
glioma_tumor



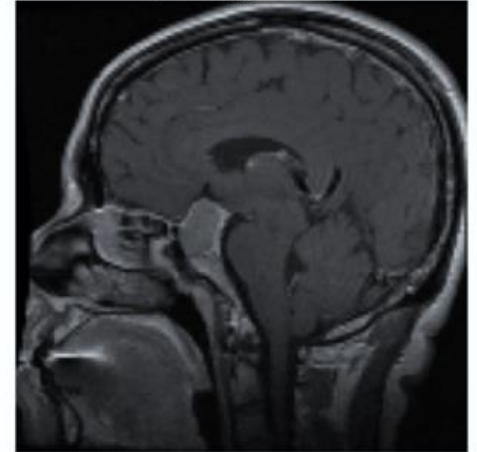
no_tumor



meningioma_tumor

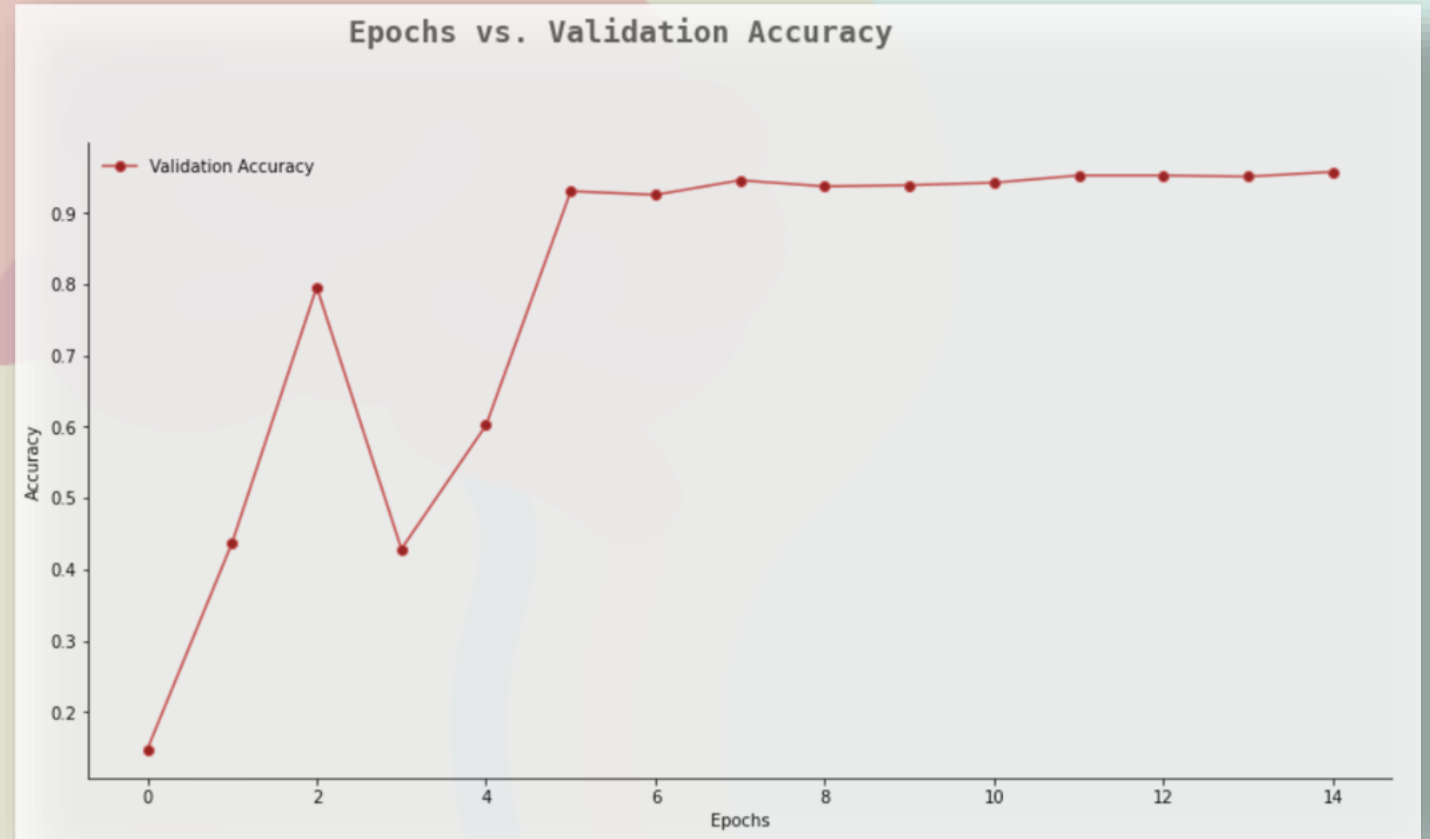


pituitary_tumor



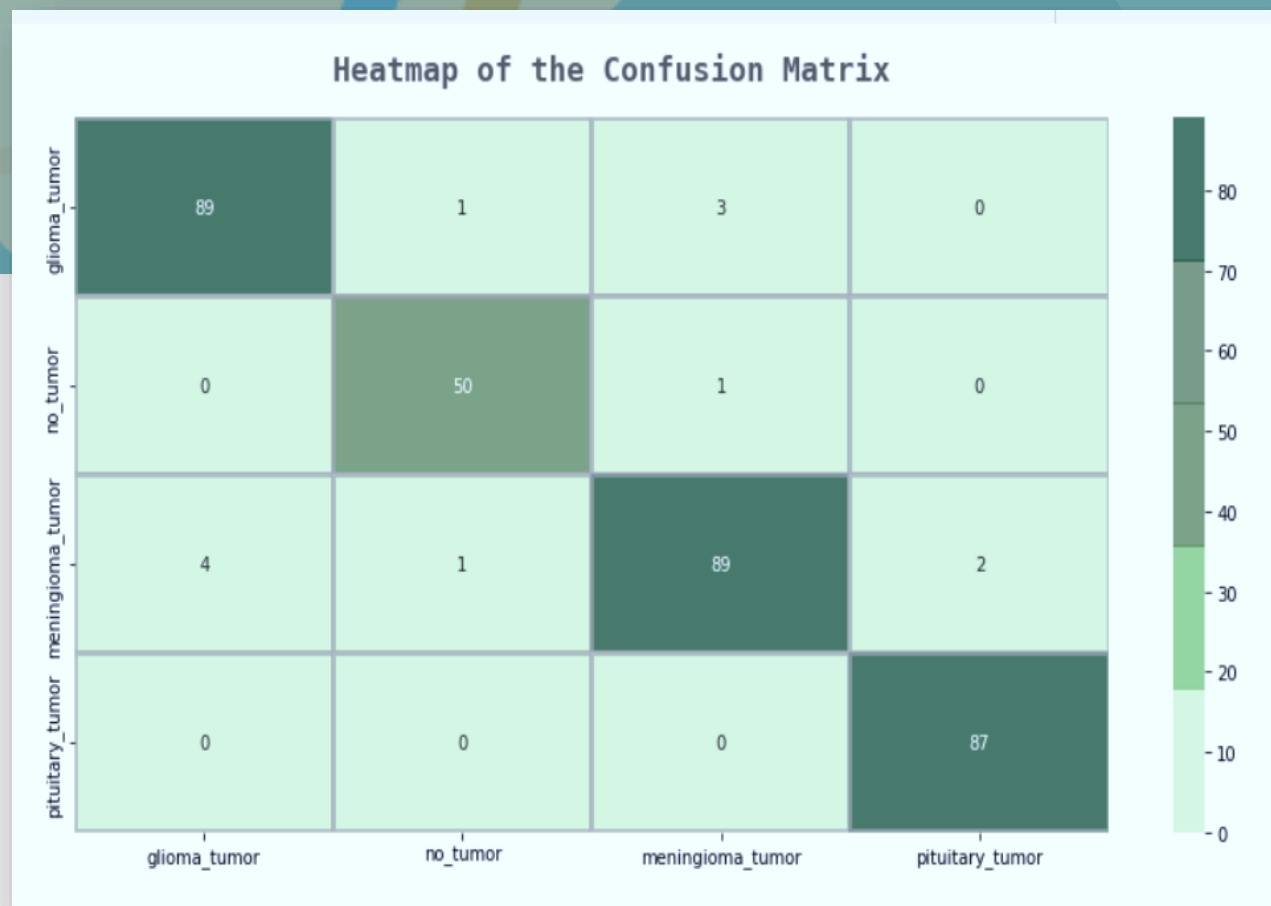
RESNET-152() MODEL

- LOSS [**BINARY_CROSSENTROPY**]
- OPTIMIZER [**ADAM**]
- METRICS [**ACCURACY**]
- EPOCHS [**15**]
- VALIDATION SPLIT [**0.2**]
- CALLBACKS:
 - **MODEL CHECKPOINT()**
 - **REDUCE LEARNING RATE()**

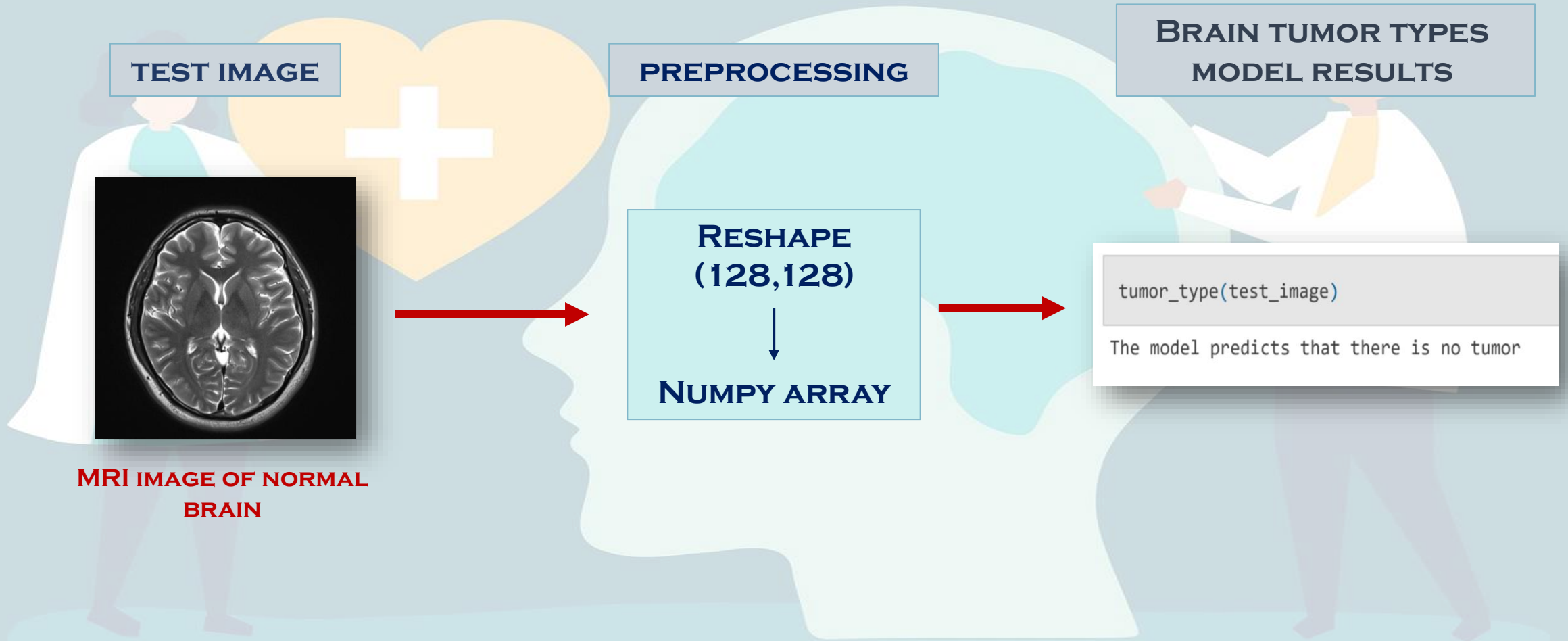


CONFUSION MATRIX OF MULTI-LABEL CLASSIFICATION

CLASSES\METRICS	PRECISION	RECALL	F1
CLASS 0	0.96	0.96	0.96
CLASS 1	0.96	0.98	0.97
CLASS 2	0.96	0.93	0.94
CLASS 3	0.98	1.0	0.99



RESULTS



An illustration featuring two healthcare professionals, a woman on the left and a man on the right, both wearing white lab coats over blue scrubs. They are holding a large blue heart with a white plus sign. In the background is a large, light blue silhouette of a human head. The text 'THANK YOU' is centered in a white box with a blue border.

THANK YOU

SHAHAD ABDULSALAM