

Brain Tumor Detection

Nick Kim



700K

Americans living with brain tumor¹

24,530

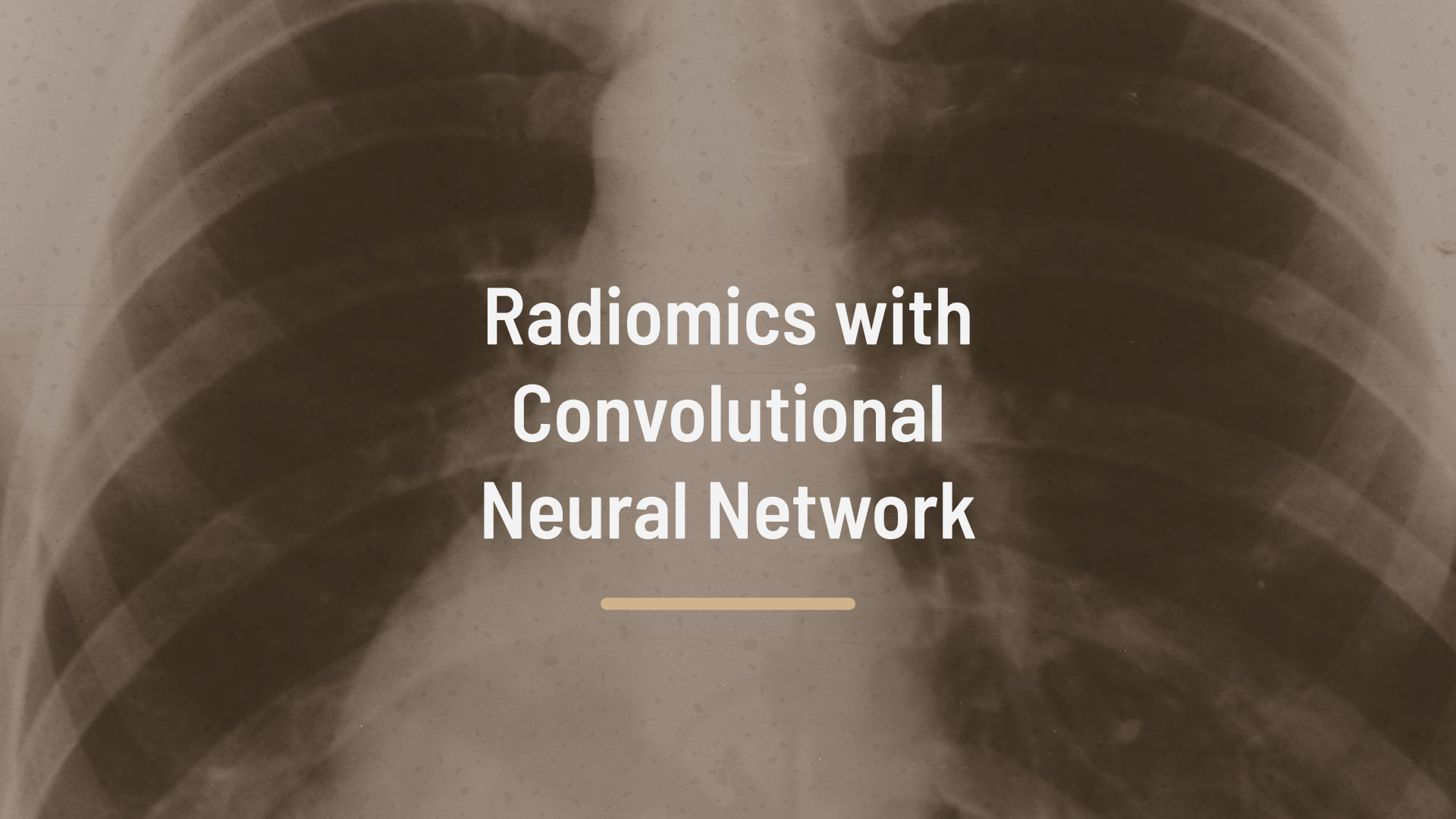
Malignant brain tumor diagnosis in 2021²

36%

Malignant brain tumor 5-year survival rate¹

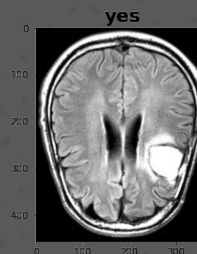
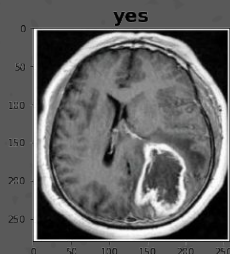
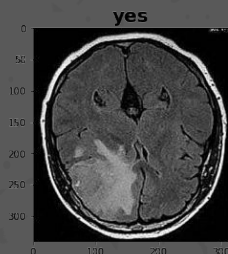
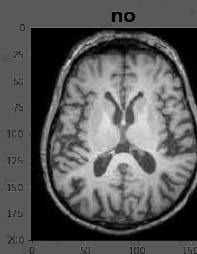
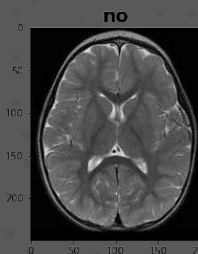
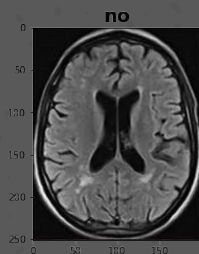
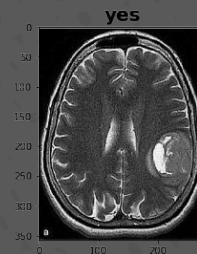
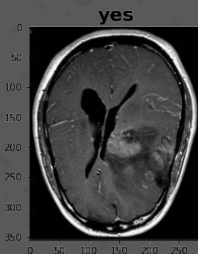
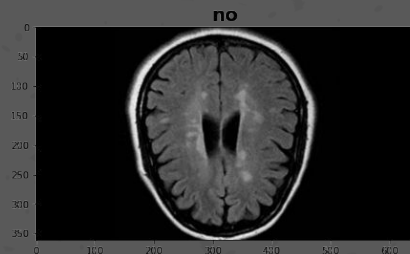
¹<https://braintumor.org/brain-tumor-information/brain-tumor-facts/>

²<https://www.cancer.org/cancer/brain-spinal-cord-tumors-adults/about/key-statistics.html>



Radiomics with Convolutional Neural Network

Samples of MRI images



Results

Logistic Regression

53%

MobileNet CNN model

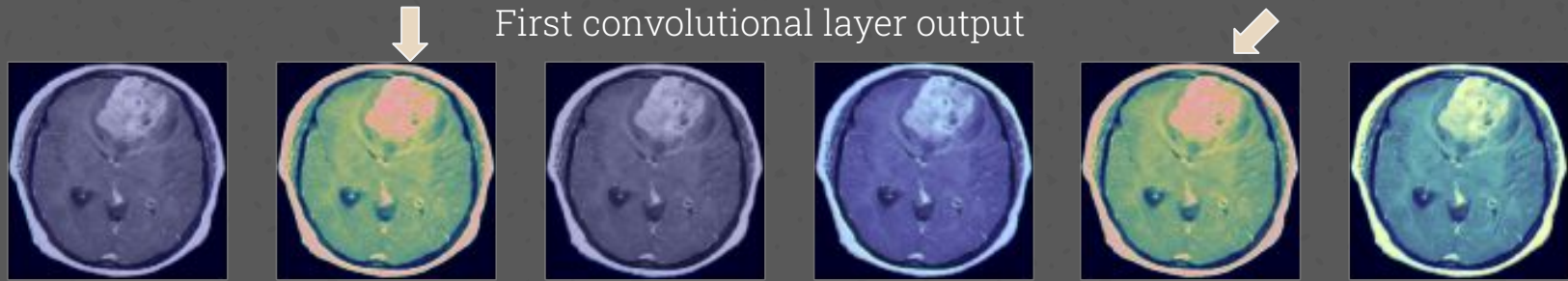
(Transfer learning with MobileNet v2)

98%

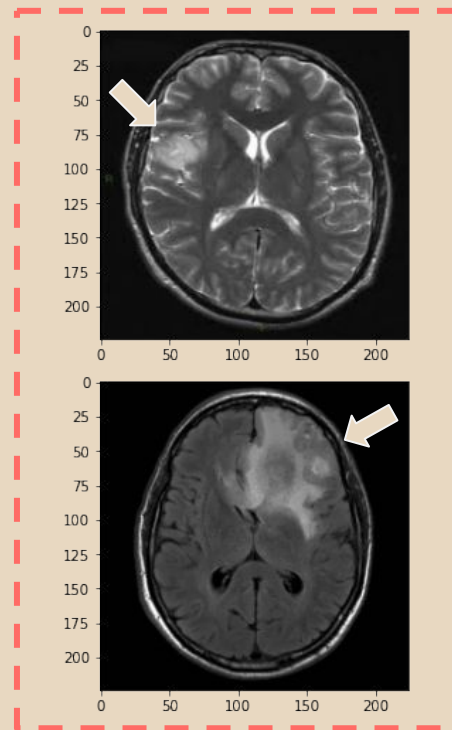
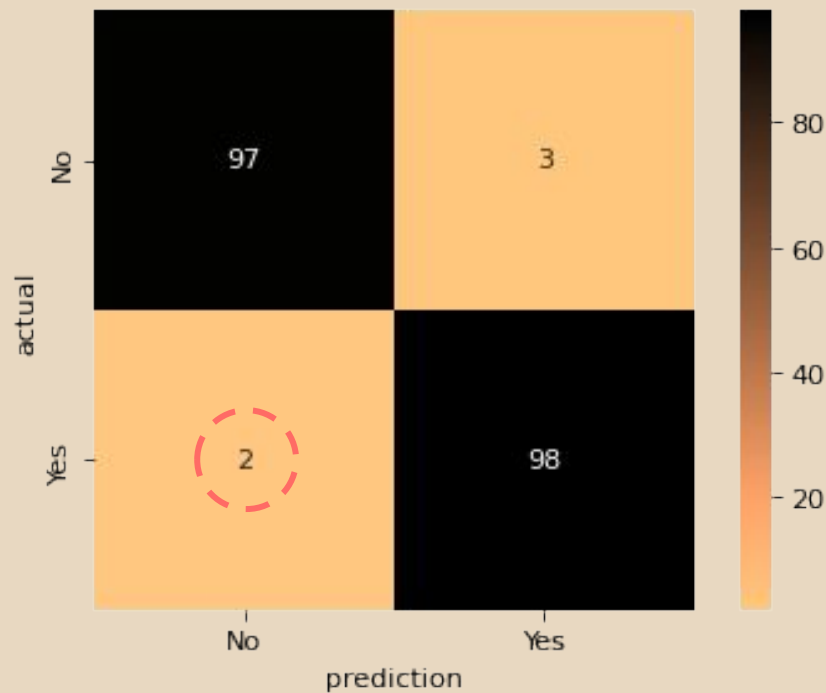
Custom CNN model

97%

Convolutional filters of "Custom CNN model" at work



Recall score at "98%" with "MobileNet CNN model"



Summary & Future Work

01.

High accuracy and recall
achievable with CNN

02.

Improvements needed in
capturing certain tumors

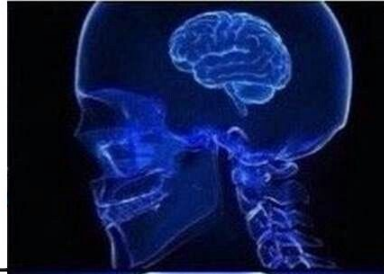
03.

Improve recall with
transfer learning

04.

Classify malignancy
and types of tumor

Looking at MRI
images for brain
cancer



Using CNN to
classify brain
cancer



Q&A



Transfer-learned CNN Architecture

