Brain Tumor Classifier

Agenda

1. Overview
2. The Approach
3. Findings
4. Next Steps
5. Conclusion

Overview

- Brain tumors are rare, but can be fatal. Proper diagnosis as early as possible is needed to improve a patient's prognosis.

- EMG Consulting has been retained to predict tumor type based on imaging taken during an MRI.

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The Approach

- Model trained on over 6,600 images across five classes (glioma, meningioma, pituitary, other, and no tumor) and tested on over 1,500 more - no significant class imbalance

- Make predictions using convolutional neural networks with varying degrees of depth and see which produces the best results

- Emphasis on creating a model that is accurate overall, with a secondary goal of maximizing recall for gliomas - want to avoid false negatives
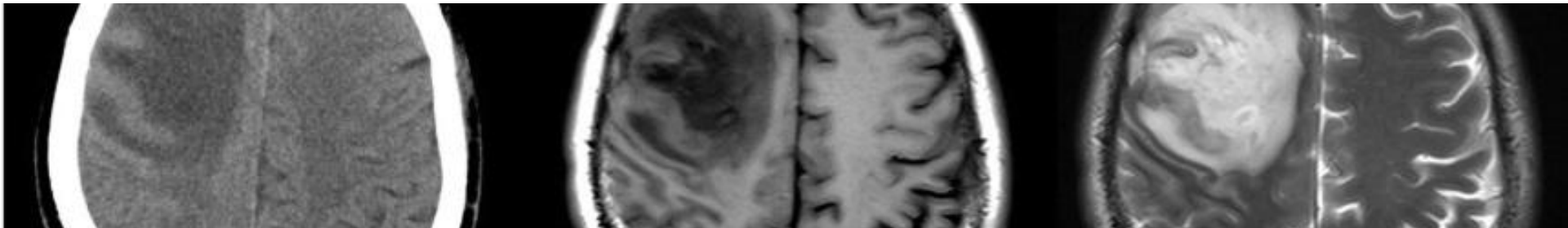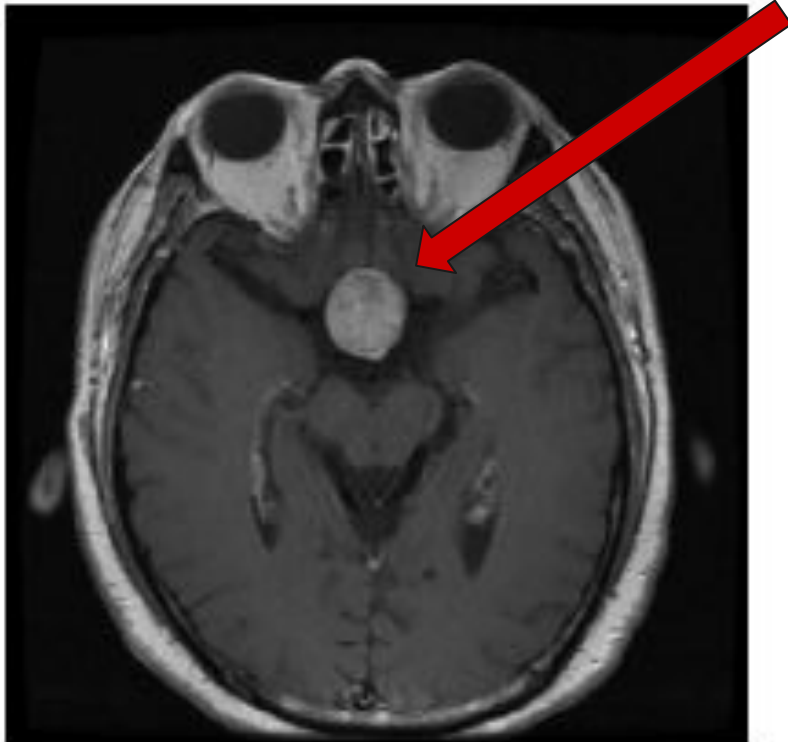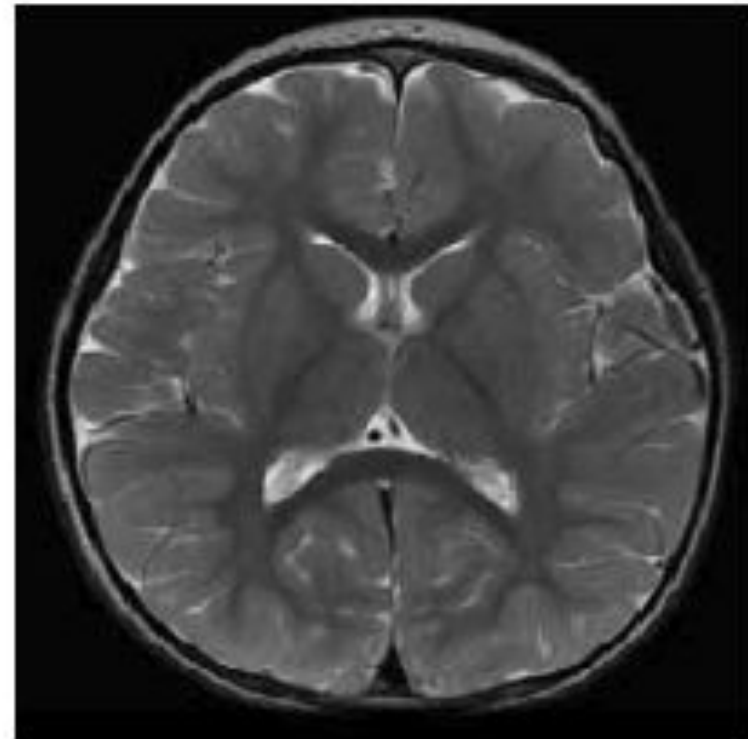
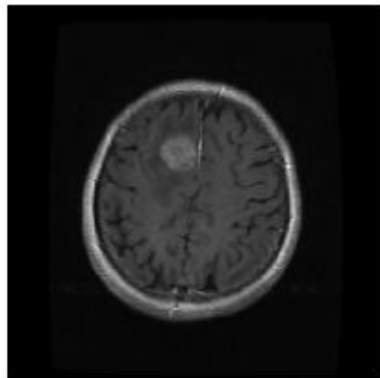# Distribution of Tumors in Data
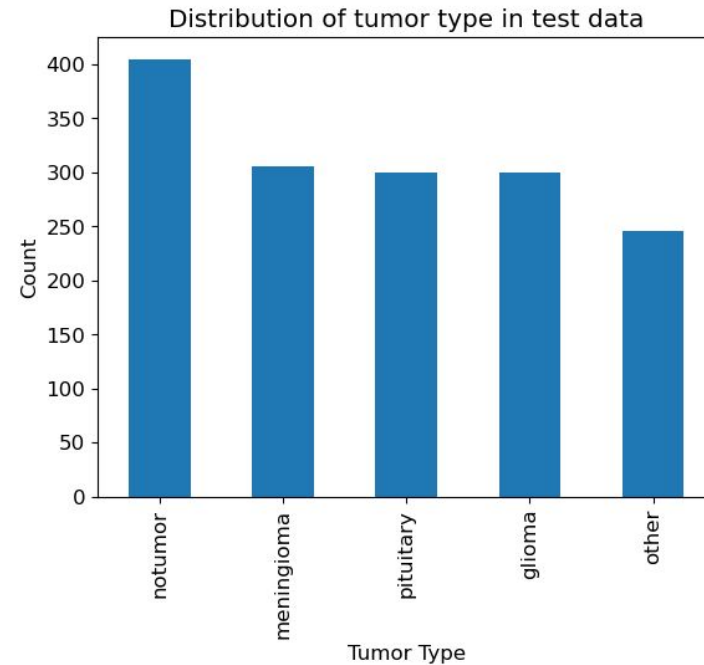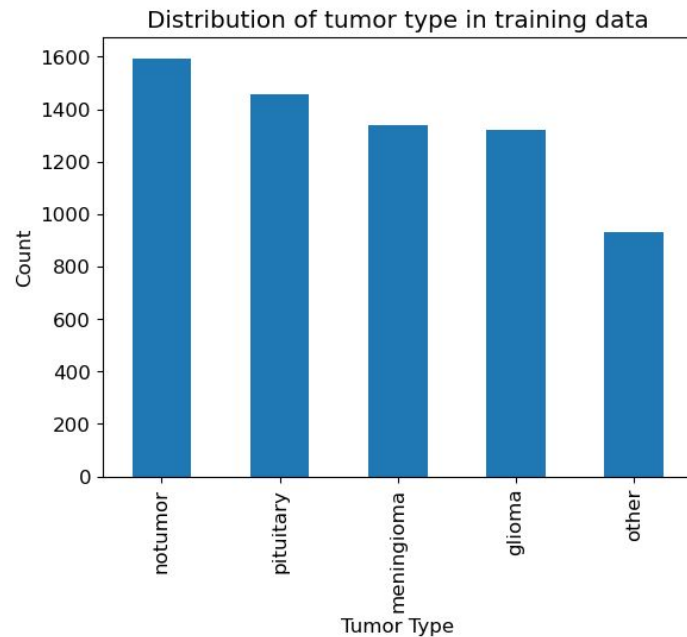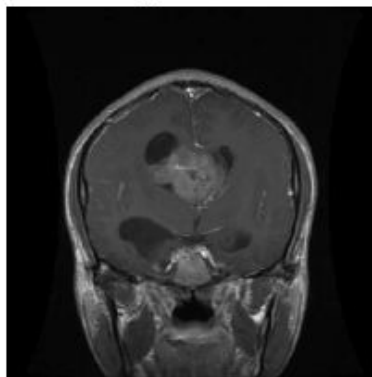
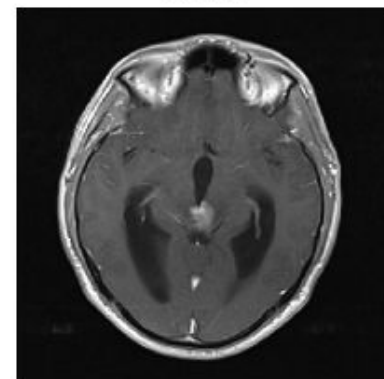**Some tumor types are harder to identify using an MRI than others.**
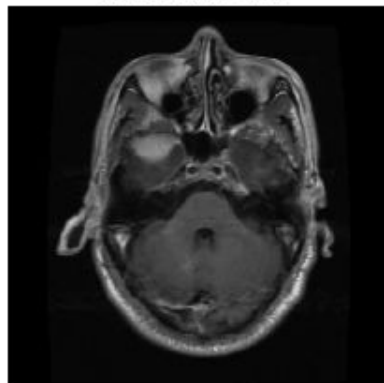
pituitary

notumor

meningioma

glioma

other

meningioma

glioma
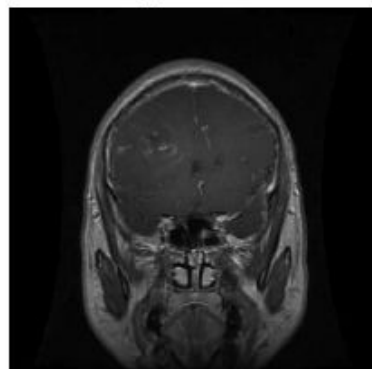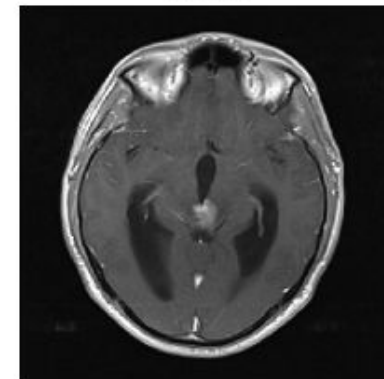
other

Gliomas and meningiomas were difficult for the model.

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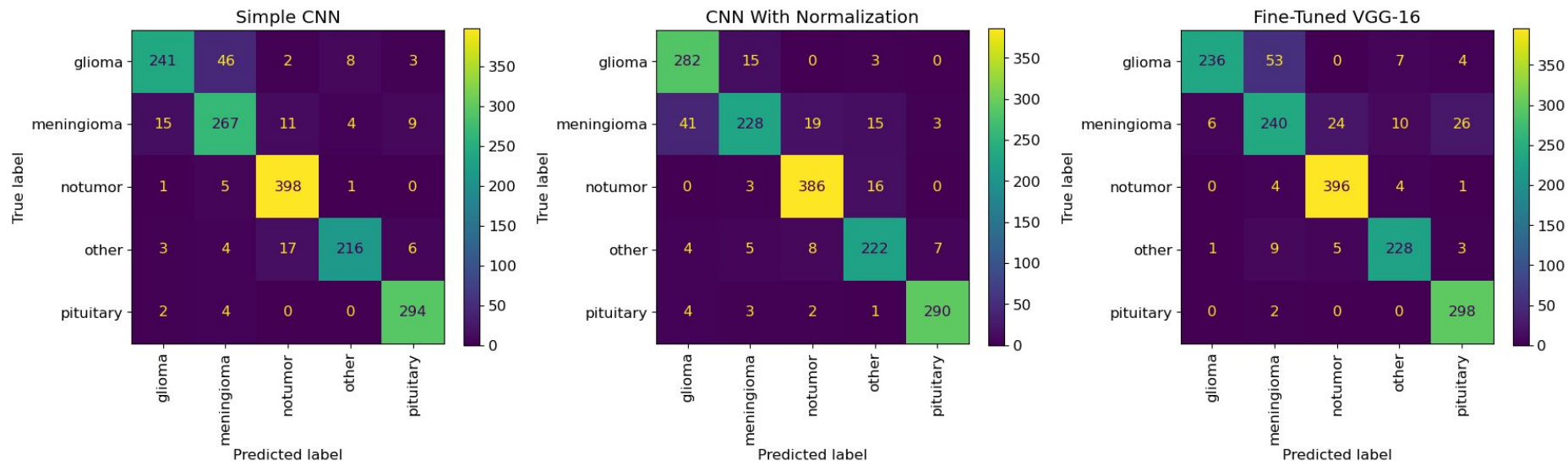
Next Steps

● Preprocess the images further by thresholding and cropping the skull/brain, to reduce the amount of black space and other potential noise present in each image before modeling.

● Expand the number of classes further to make more granular classification predictions possible.

● Test additional transfer learning approaches, such as AlexNet and GoogLeNet.

Thank you.

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GitHub Repository Link