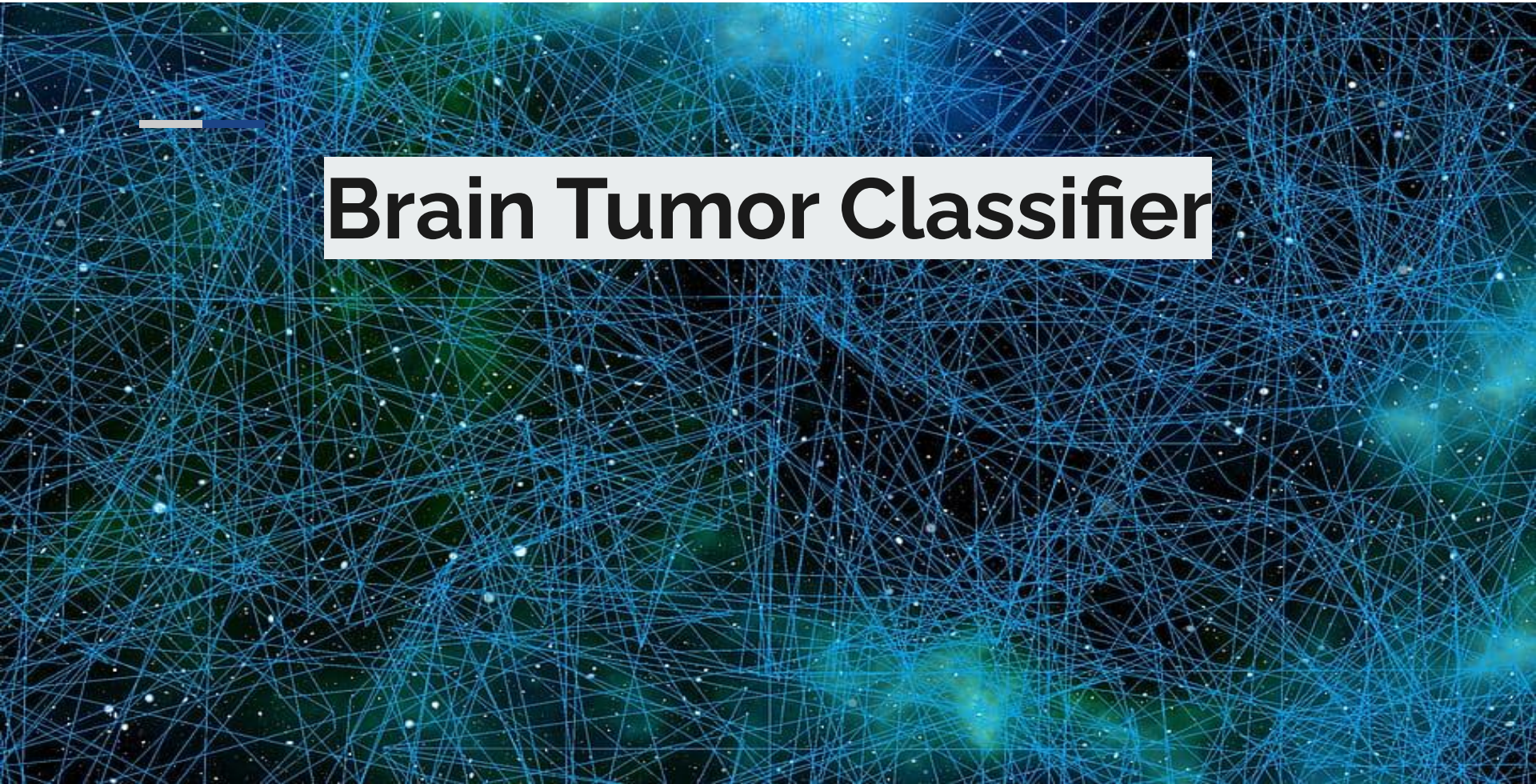

# Brain Tumor Classifier

# 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.

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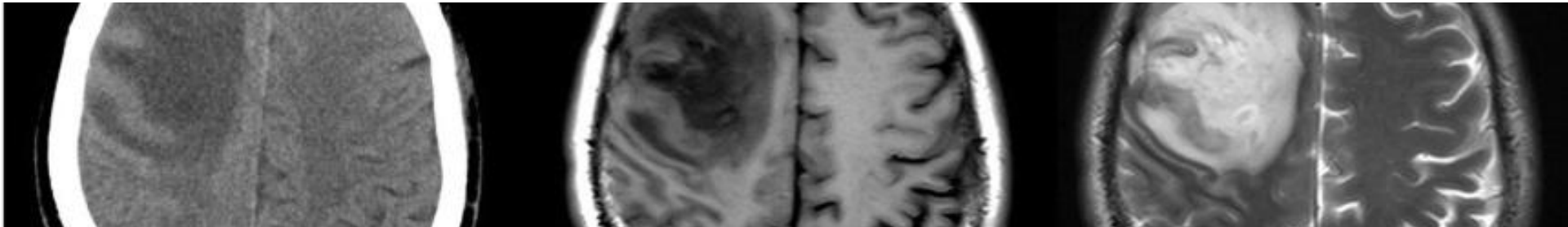
- EMG Consulting has been retained to predict tumor type based on imaging taken during an MRI.

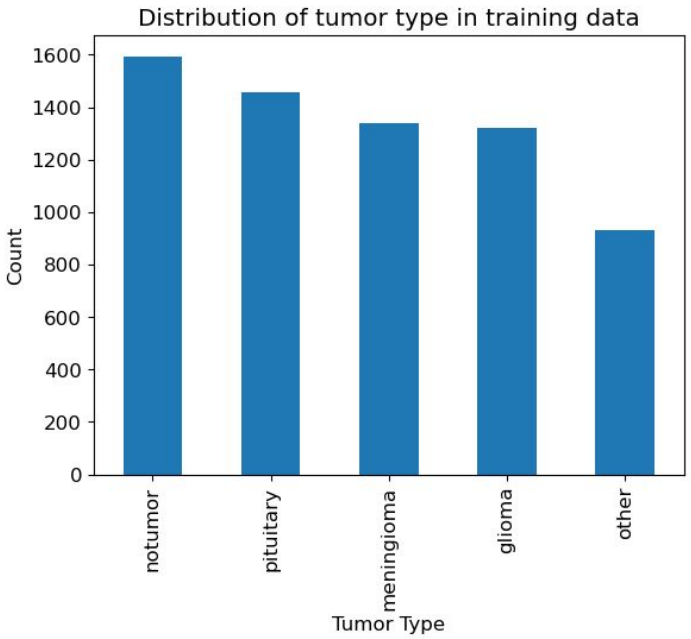
EMG CONSULTING
DATA. ANALYSIS. INSIGHTS.

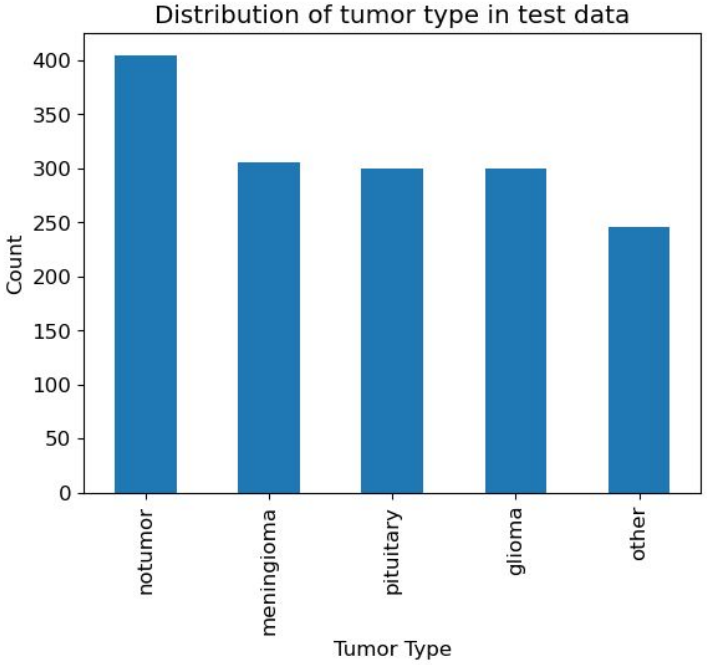
# The Approach

- 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



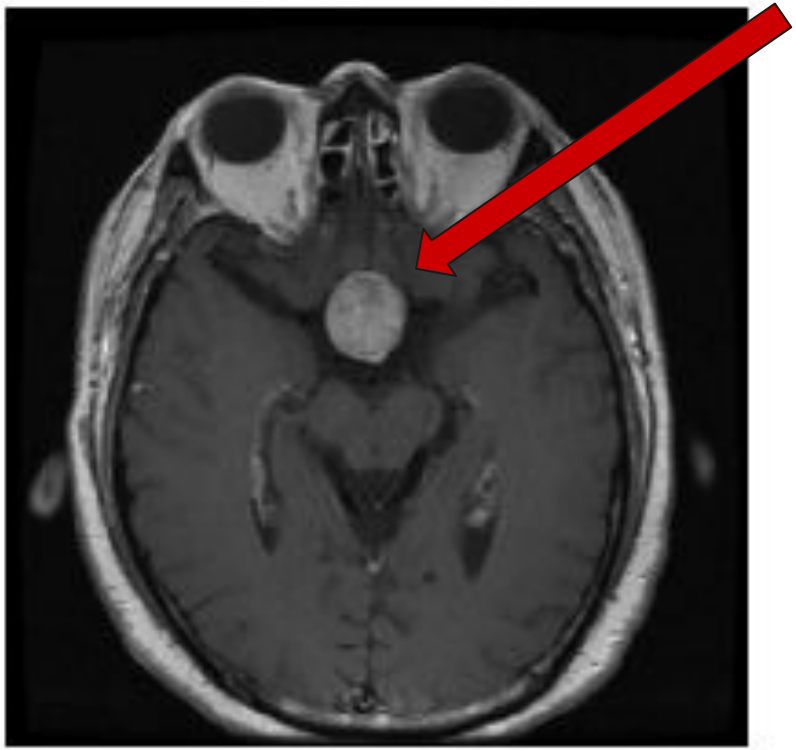
# Distribution of Tumors in Data



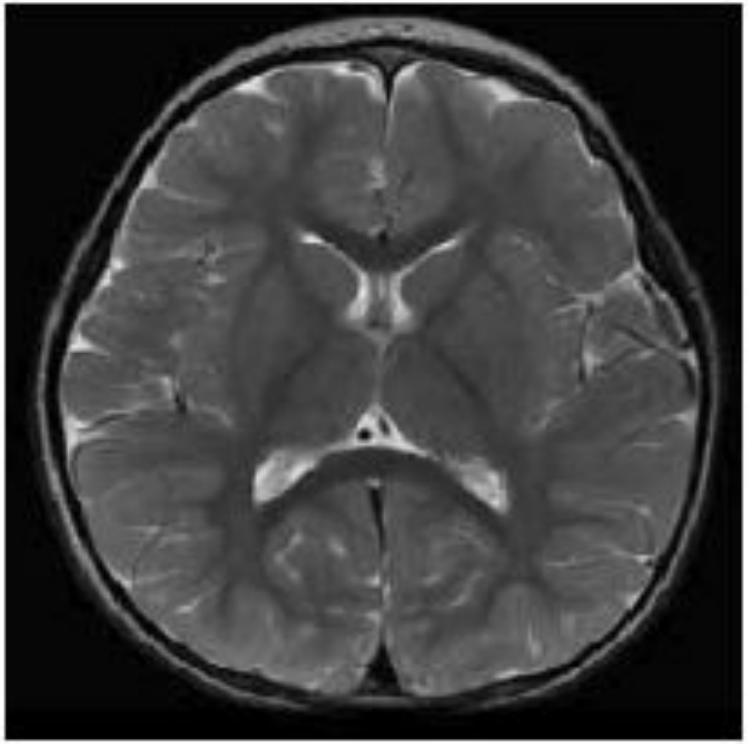



# Some tumor types are harder to identify using an MRI than others.

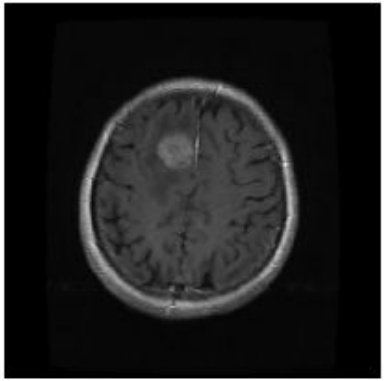
pituitary



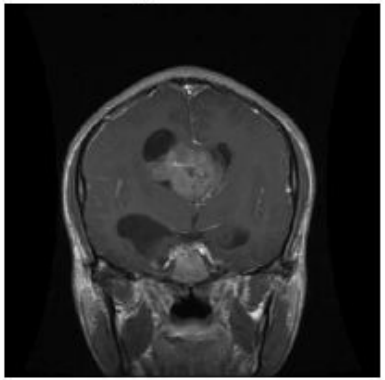
notumor



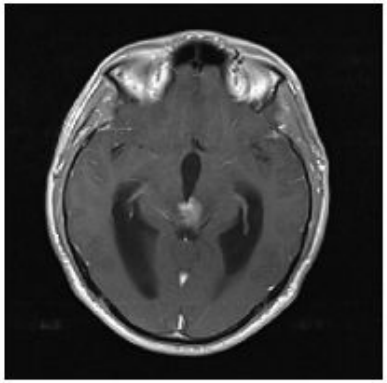
meningioma



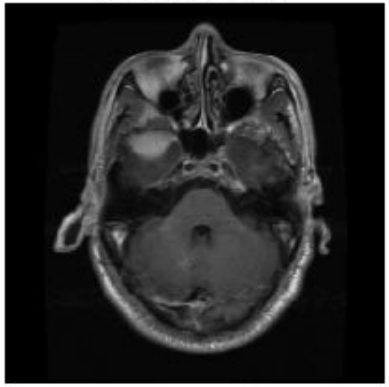
glioma



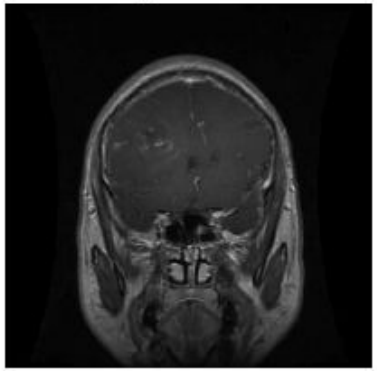
other



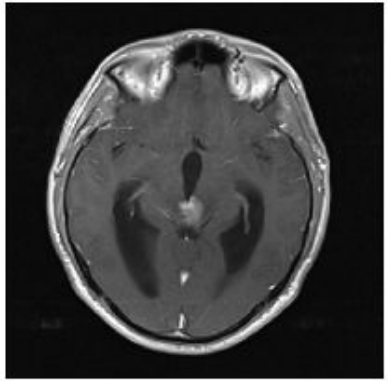
meningioma



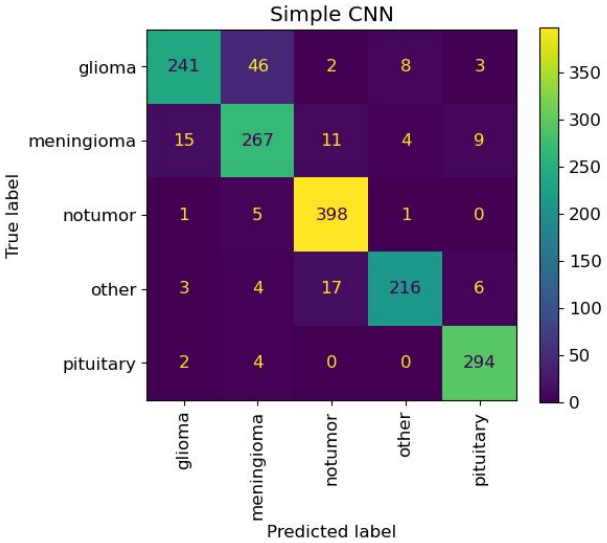
glioma

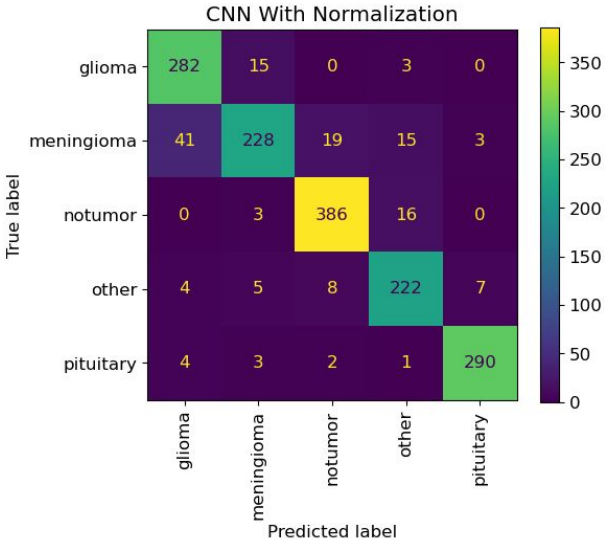


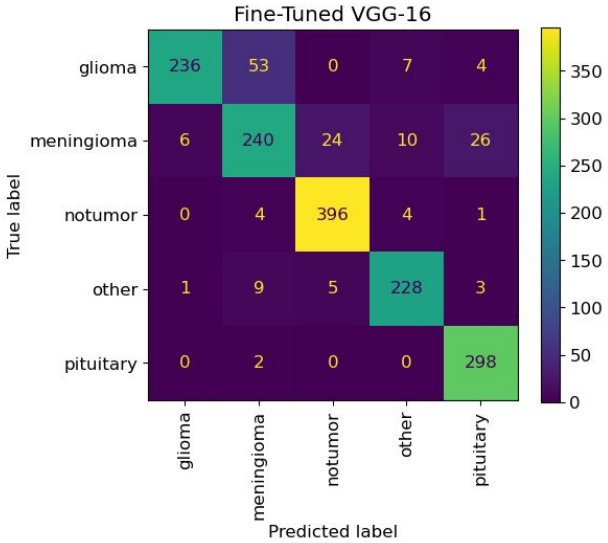
other



# Gliomas and meningiomas were difficult for the model.



# Next Steps

- Massively increase the size of the training data, with articles from a wide array of organizations. Partner with impartial fact-checking organizations to ensure validity of labels in training data.

- Work with transcription services to quickly analyze and label misleading video content.

- Continue to refine preprocessing and modeling to further shrink number of incorrect predictions.

# Thank you.

Contact:
emgerber94@gmail.com

GitHub Repository Link