Shaveta Arora et al. proposed a research study to apply deep learning techniques to classify brain tumors from MRI scans. They used the BRATS2015 dataset, a collection of MRI brain images, and employed feature extraction through the gray level co-occurrence matrix (GLCM). They rigorously evaluated several models, including an SVM classifier, random forest classifier, VGG16, Inception\_V3, and ResNet.

**The following table summarizes their results:**

|  |  |  |  |
| --- | --- | --- | --- |
| Model | Training Accuracy | Validation Accuracy | Testing Accuracy |
| SVM Classifier | 71.34% | 52.56% | 50.51% |
| Random Forest Classifier | 72.78% | 64.3% | 64.23% |
| VGG16 | 96.3% | 92.23% | 90.54% |
| Inception\_V3 | 93.4% | 64.8% | 63.94% |
| ResNet | 99.7% | 82.12% | 81.92% |

​The VGG16 model significantly outperformed traditional machine learning methods, achieving an accuracy of 90.54% on the test set. This suggests that deep learning has the potential to be a powerful tool for brain tumor classification from MRI images.​

<https://ieeexplore.ieee.org/document/9702609>

Liang Zhang et al. proposed a deep learning-based approach to classify rocket images derived from aerospace optical equipment. They developed a binary classification model using the ResNet18 framework and modified the binary cross entropy loss function to improve generalization performance on difficult images. The model was trained on a dataset of 2,689 images, and achieved 100% precision, 83.33% recall, and 95.87% F1 score on the test set of 97 images, which included 24 rocket images. Four rocket images were misclassified as non-rocket images.

The results of their metrics are as follows:

|  |  |
| --- | --- |
| Metric | Value |
| Precision | 100% |
|  |  |
| Recall | 83.33% |
| F1 score | 95.87% |

The model's high performance demonstrates the potential of deep learning for rocket image classification.

<https://ieeexplore.ieee.org/document/8769176>