How my thesis is unique ?

Certainly! Based on the information you provided, here are a few points that highlight the uniqueness and original contributions of your thesis:

1. \*\*Specialized Dataset Composition:\*\* Your dataset not only focuses on brain tumor classification but also acknowledges the diversity in MRI scan types. While predominantly axial, the inclusion of a minimal representation of coronal scans prompts the need for a model capable of accurate predictions across various scan types.

2. \*\*Strategic Dataset Preprocessing:\*\* The decision to exclude the lone coronal image for enhanced model accuracy demonstrates a thoughtful approach to dataset preprocessing. This strategy is aimed at optimizing the model for the predominant scan type while considering potential inaccuracies in predicting other types.

3. \*\*Comprehensive Feature Engineering:\*\* The implementation of a streamlined pipeline for image preprocessing, utilizing tf.keras.utils.image\_dataset\_from\_directory, showcases an efficient and standardized workflow. The grayscale conversion of images aligns with the singular color channel nature of MRI scans, emphasizing attention to detail in feature engineering.

4. \*\*Baseline Model Architecture:\*\* The creation of a baseline model with a simple yet effective architecture, incorporating Exponential Linear Unit (ELU) activations, sets the foundation for subsequent model iterations. This deliberate choice addresses challenges associated with Rectified Linear Unit (ReLU) activations, demonstrating a nuanced understanding of activation functions.

5. \*\*Strategic Use of Transfer Learning:\*\* The adoption of VGG16 for transfer learning adds a layer of sophistication to your approach. Leveraging the pre-trained model's features and representations is a strategic move, especially in the context of limited data. The subsequent extension of the architecture and transition to Rectified Linear Unit (ReLU) activations reflect a thoughtful consideration of model performance.

6. \*\*Comparative Analysis with ResNet18:\*\* The inclusion of a comparative analysis with the ResNet18 model, as presented in the base paper, emphasizes a commitment to benchmarking and assessing model performance comprehensively. This approach allows for a nuanced understanding of the strengths and limitations of each architecture, contributing to a well-rounded evaluation.

7. \*\*Future Prospects and Additional Features:\*\* The acknowledgment of model limitations in handling sagittal and coronal scans presents a clear avenue for future work. The tantalizing prospect of creating a supplementary model using Mask R-CNN to not only classify tumors but also pinpoint their location adds an innovative dimension to your thesis.

By highlighting these points, you can articulate the distinctive aspects of your thesis, showcasing its original contributions and setting it apart from existing works in the field of brain tumor classification using CNNs.