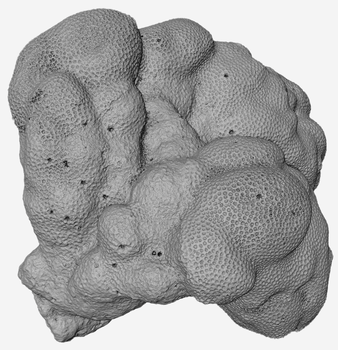
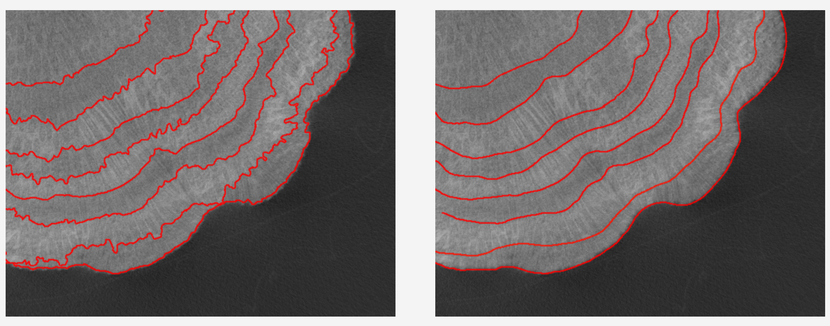
## Initial Dataset



## Labelling the Data



Discuss the slice selection and extraction process. Outline the chosen methods of manual slice labelling.

## Two Dimensional Boundary Extraction

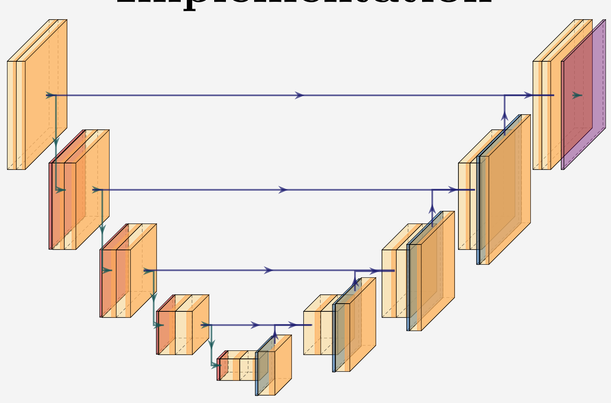
### Dataset Curation

Discuss the sliding window technique used. Justify the dataset splits chosen.

### Data Augmentation

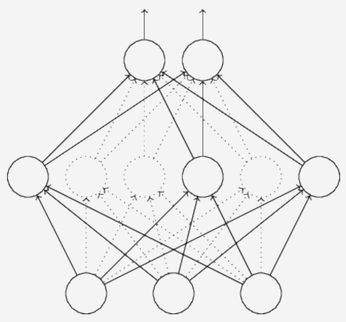
Introduce the Keras class used and discuss acceptable transformations.

### Architecture Implementation



Discuss the implementation of the U-Net architecture, early stopping, model checkpointing, metric visualisation, and training using Keras. Introduce the hyperparameters used to train the initial implementation and showcase initial results.

## Experimentation



Discuss experiments carried out in order to both improve the performance, and gain a better understanding, of the sub-components implemented. Experiments with hyperparameter optimisation, dropout, varying augmentation transformation ranges, and ablation studies are discussed.

## Accuracy Metric Implementation

Discuss the motivation behind, and implementation of, a custom accuracy metric that makes used of thresholding, skeletonization, and is based off of average Euclidean distances between the predictions and ground truth.

## Calcification Rate Estimation

Discuss the estimation of the calcification rate using the boundaries produced by the models implemented.

## Three Dimensional Boundary Extraction

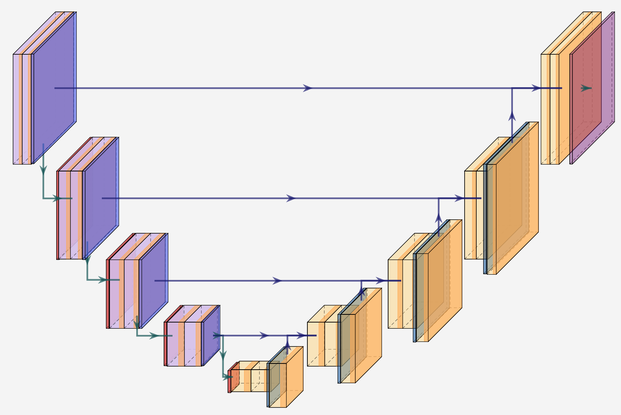
### Dataset Curation

Discuss the sliding window technique used. Justify the dataset splits chosen.

### Data Augmentation

Introduce the custom data loaders and discuss the custom transformations implemented.

### Architecture Modification



Discuss the implementation of multiple modified U-Net architectures designed to precess 3D data. Introduce the hyperparameters used to train the initial implementations and showcase initial results.