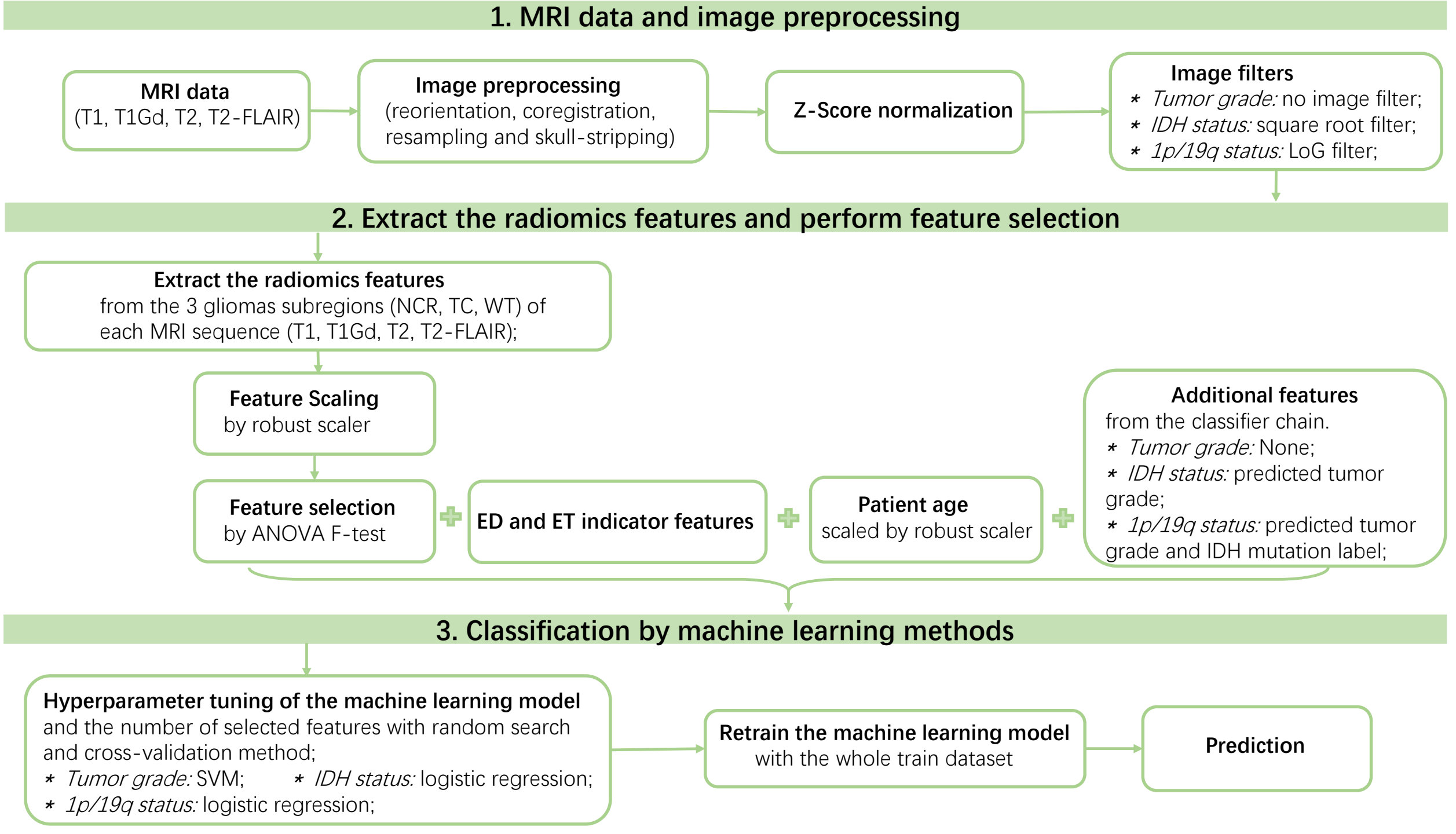
1. MRI data and image preprocessing
MRI data
(T1, T1Gd, T2, T2-FLAIR)
Image preprocessing
(reorientation, coregistration, resampling and skull-stripping)
Z-Score normalization
Image filters
* Tumor grade: no image filter;
* IDH status: square root filter;
* 1p/19q status: LoG filter;
2. Extract the radiomics features and perform feature selection
Extract the radiomics features
from the 3 gliomas subregions (NCR, TC, WT) of each MRI sequence (T1, T1Gd, T2, T2-FLAIR);
Feature Scaling
by robust scaler
Feature selection
by ANOVA F-test
ED and ET indicator features
Patient age
scaled by robust scaler
Additional features
from the classifier chain.
* Tumor grade: None;
* IDH status: predicted tumor grade;
* 1p/19q status: predicted tumor grade and IDH mutation label;
3. Classification by machine learning methods
Hyperparameter tuning of the machine learning model
and the number of selected features with random search and cross-validation method;
* Tumor grade: SVM;
* IDH status: logistic regression;
* 1p/19q status: logistic regression;
Retrain the machine learning model
with the whole train dataset
Prediction