Purpose:

Most automated ML methods predicting GPRs do not give enough information or insight about the potential causes of inaccurate delivery of treatment plans, reducing their reliability and implementation. Additionally, the literature reports automated GPR predicting models based only on dose distributions data, excluding treatment unit parameters which might account for linac variations throughout the delivery treatment time (or control points) such as LTM or MUcp. In the same way, there is no evidence of automated GPRs prediction using the blended dose images from portal dosimetry evaluation, even when these images from the accumulated dose distributions are used for gamma index evaluation.

For these reasons, we intended to evaluate the suitability of automated predicted GPRs methods using features that could give us an idea of what might influence specific GPR predictions.

Methods:

Create single models with:

* dose distribution
* LTM
* MUcp
* blended images
* maybe contours?

Create hybrid models:

* dose distribution + LTM
* dose distribution + MUcp
* dose distribution + blended images
* dose distribution + LTM + MUcp
* dose distribution + LTM + blended images
* all

Conclusions:

* We achieve comparable results predicting GPRs using dose distribution data
* LTM, MUcp, and blended images are also important features for automated GPR predictions
* hybrid models improve the prediction ‘accuracy’
* Which kind of data (or feature combination) would be better to create automated GPR predictions (only dose distributions seem to not give enough information)?