

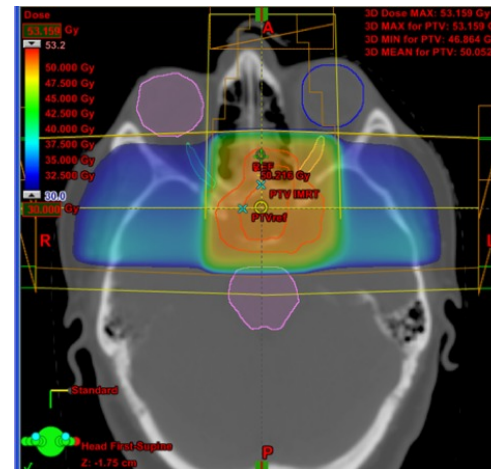
Predicting the risk of side effects for patients undergoing radiotherapy

Head-and-neck cancer patient:

- Characteristics:
 - Age
 - Sex
 - Weight
 - Smoking
 - Alcohol
- Planned radiation dose to each organ
- Symptoms prior to treatment



Radiotherapy



Side effects 1 year later:

- Dry mouth
- Difficulty swallowing
- Taste disturbance
- Salivary duct inflammation

Can we predict whether a patient will suffer side effects?

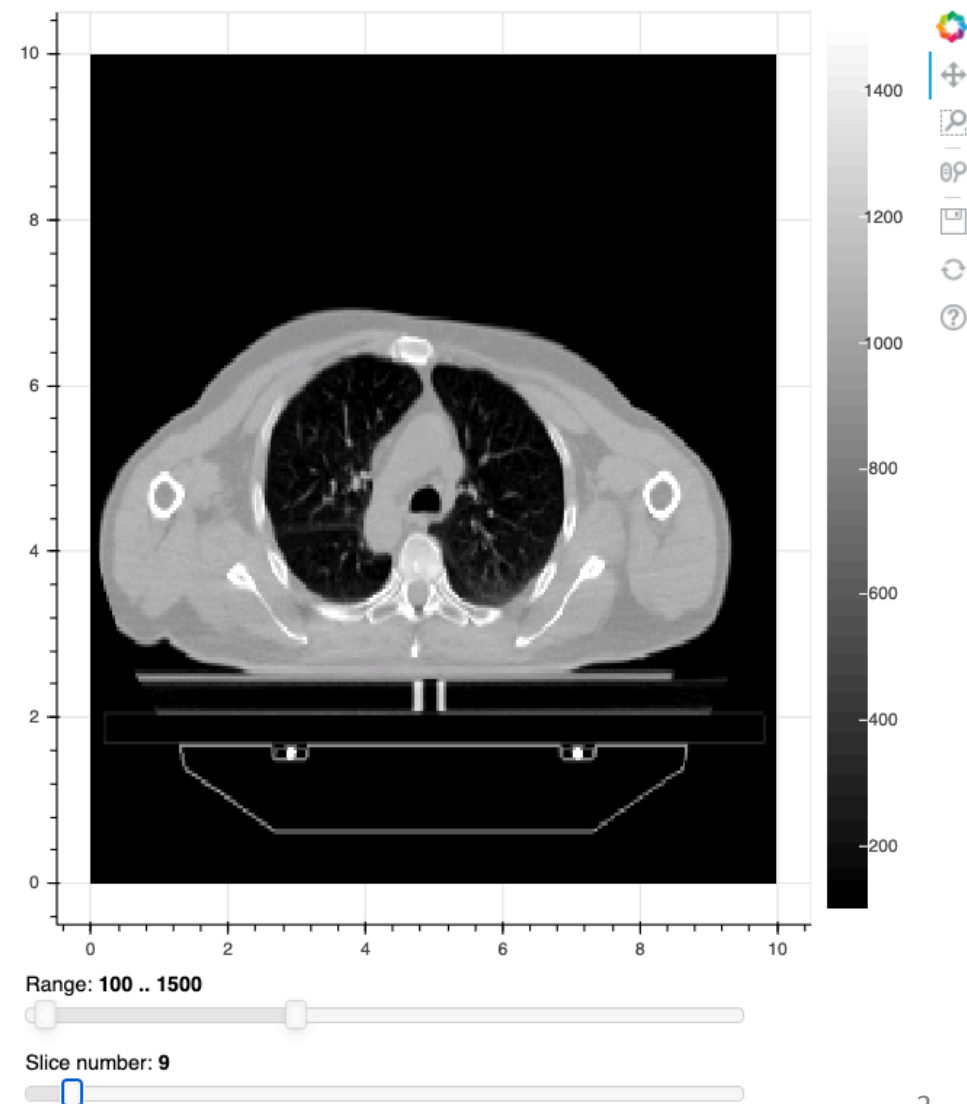


Data processing

- 182 patients
- Data split between 5 excel/csv files
- Read and cleaned with pandas
- Binarized symptoms of interest → classification problem



Visualization



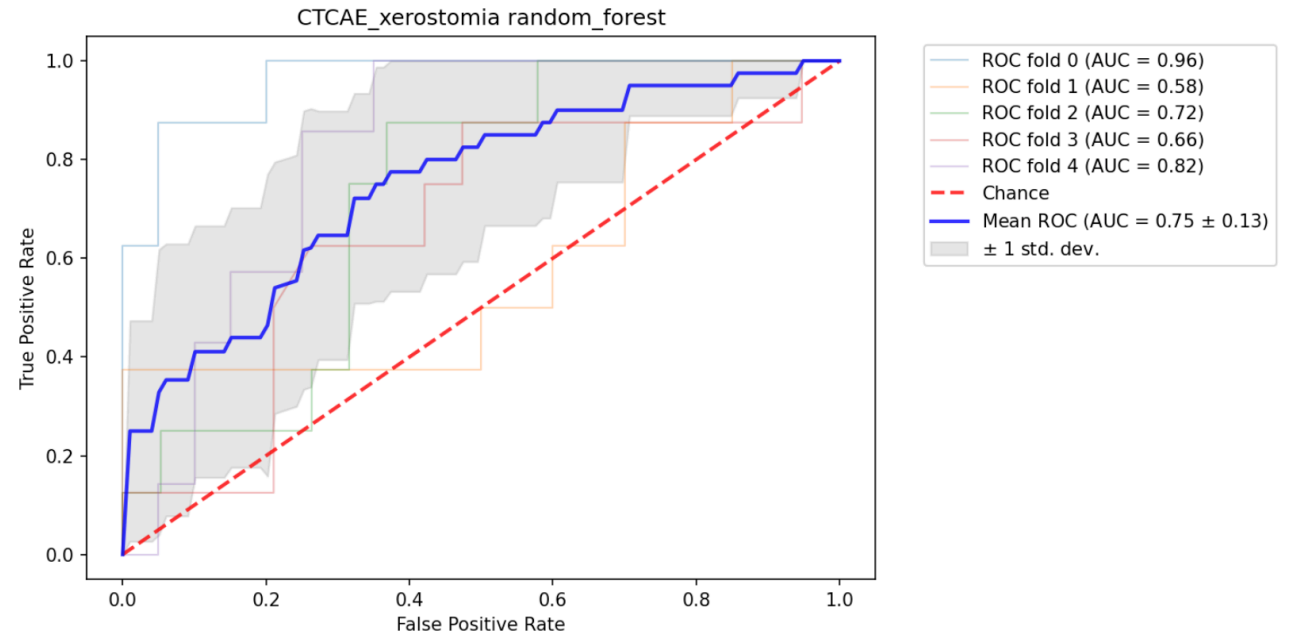
Models considered:

- Logistic regression
- KNN
- SVM
- Random forest

KNN and random forest performed the best!

Ultimate goal: identify patients at high risk of side effects, and mitigate this with a personalized treatment plan

Random forest for patients with dry mouth:



random_forest				
	precision	recall	f1-score	support
0	0.87	0.69	0.77	98
1	0.49	0.74	0.59	39
accuracy			0.71	137
macro avg	0.68	0.72	0.68	137
weighted avg	0.76	0.71	0.72	137