Clinical data

Work in progress

Independent data variables

Pain Characteristics	Neurological (CN V) Function	Medical History	Surgical Response
Side	Facial muscles	Comorbidities	Pain status
Distribution	Lacrimation	Previous surgical procedures	Medication status
Duration	Corneal reflex		Pain recurrence
Triggers	Numbness		
Description			
Attack frequency			
Medication effect			
Barrow Neurological Institute (BNI) pain score			

One hot encoding and z-score normalization were used to transform clinical data

Inclusion Criteria	Exclusion Criteria
Classical TN patients treated with GK, MVD, or rhizotomy	Surgically untreated TN, MS-TN, SPL-TN, TN secondary to tumor/nerve injury/infection, bilateral TN, other neurological condition (Alzheimer's disease, brain tumors, etc.), history of rhizotomy.

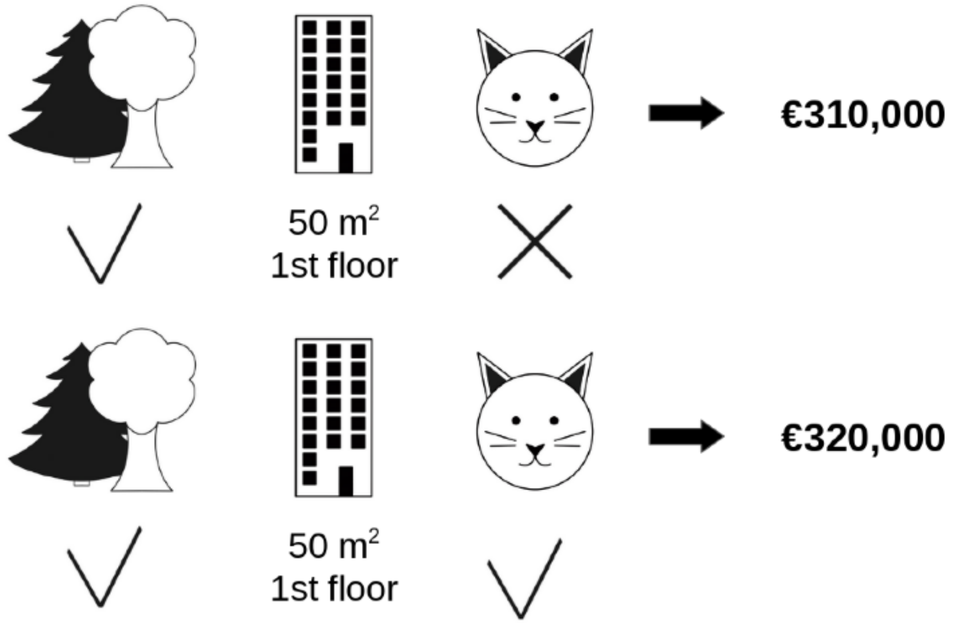
Shapley values and PCA reconstruction error model

Work in progress

Shapley value: Average marginal contribution of a feature value across all possible coalitions.

- Model is tested with iterations of unique coalitions.
- The predicted outcome is computed with and without the feature value of interest for each coalition.
- The mean of the marginal contributions from all iterations is calculated as the Shapley value.

The Shapley value is the average contribution of a feature value to the prediction in different coalitions. The larger the Shapley value, the more it affects the model prediction.



Reconstruction error model:
By considering Shapley values for reconstruction error, we can identify features that lead to higher reconstruction errors in PCA.

SHAP