Code Overview

Classes

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| AbstractFeatureExtraction | Abstact class for feature extractin classes |
| FeatureExtractionManager | Class that manages feature extraction classes |
| InformationExtractor | Class that includes methods that extract patient information from the corresponding txt file |
| WaveletExtraction | Class that performs a wavelet decomposition and extracts features  Inherits from AbstractFeatureExtraction |

Functions

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| functionsForEDFFiles | Contains functions to clean edf-files and to calculate the powerspectrum from them   * calculatePowerForBands: calculates powerspectrum for mixed model * calculatePowerForBandsAveragePatient: calculates powerspectrum for t-tests * cleanData: cleans edf-files |
| functionsForTUHData | * contains the methods created to work with the TUH Corpus: * functionsForTUHData * splitAnd(medications): splits medications into vector * createCorrelationTable(drugs,antipsychTable,usedDrugsId,slowing): This methode creates the distribution tabels for anti-psychotics and as slow labeld records   + drugs contains the results from method   + antipsychtable conatins the names of the differndt anti-psychotics,   + uesedDrugsId contains the idnice of antipsychotics that are applied in the TUH corpus and   + slowing contains the labels for slow records. * findDiffernetMedicines(medication): This function extract the differnt drugs found in the medication vectors * searchClozapine(medication): Look for clozapine in the extracted medication * matchResults(clinicalreports,results,edfFiles): this function matches the information extracted from the clinicl reports with the results of the record detection on the full TUH EEG corpus * createresult(list) * createFileList(typ,folder): creates list of files of the defined type that are included in the folder * extractInformations(fileList,drugTable): creates a matrix for the detected antipsychotic drugs in the clincal reports. Each row in drugs corresponds to a record in clinicalReportsList and each coulmn corresponds to a drug of antipsychTable.   + filelist consists of a list of paths of clinical reports.   + drugtable contains the brand and generica names of antipsychotic drugs. * And many more! |
| functionsTuhDownload | Functions to download data |
| ScriptWorkWithExcelData | Functions to work with excel data |
| visualizeEEGData | Functions to calculate data from edf-files, do statistics and plot the results   * calcAllFreqAllChannel: calculates accumulating power data for all frequencies and all channels * createData: calculates accumulating power data for one channel with one frequency   + used by calcAllFreqAllChannel * createDataClozapine: calculates accumulating power data for one channel with one frequency   + used by calcAllFreqAllChannel * calculatePowerForBands: calculates the power spectral density for a list of edf files * calcPValueAndMore: calculates statistics for normal and medical data * calcPValueAndMoreWithSampling: calculates statistics for normal and medical data * setUpChannelsFrequencies: setup function for used strings for channels and frequencies   + used by calcAllFreqAllChannel * visualizePValues: draws the plots for pvalue data * getPValueFromCellArray: gets correct value from summary data file   + used in visualizePValues * getColorForPValue: retuns a color for a given p Value   + used in visualizePValues * calcDifferenceOfMeans: calculates the difference of means * barhGraph: draws a bar graph for a channel for its mean data * createCompleteDrugsList * countUniqueWords |
| xlscol |  |

Scripts

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| cacheTUH | Cache portion of TUH corpus |
| cleanData | Cleans all edf-files for list of drugs |
| concatNormalAndFullTable | Concatenates normal data table and full data table for mixed model |
| createPSForMixedModel | Creates powerspectrum table for mixed model for each drug in list |
| createTableMixedModel | Creates full table for mixed model from powerspectrum tables for individual drugs (created in createPSForMixedModel.m) and receptor properties table |
| doStatistics | Does t-tests for each drug in list and visualizes the results |
| downloadEDFForCertainMedicine | Download edf/text-files for all drugs in list |
| downloadNormalData | Download edf/text-files for normal files |
| drugGroups | Calculates powerspectrum for all drug groups from Hyun |
| fitMixedModel | Fits and compares different mixed models |
| prepareData | Clean data and calculate powerspectrum for t-tests for list of drugs |
| prepareNormalData | Get normal data used for mixed model or t-tests and calculate powerspectrum |
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How to do statistics:

* download data: run *downloadEDFForCertainMedicine.m* and *downloadNormalData.m*
* clean data: run *cleanData.m*
  + make sure to also clean the normal data!

T-tests:

* calculate powerspectrum for each drug: run *prepareData.m*
  + this uses the function *calculatePowerForBandsAveragePatient*
  + can also be used to clean the data, if not done previously
* calculate powerspectrum for normal data: run *prepareNormal.m*
  + set *medicine=’All’*
  + also excludes all files that contain drugs used in model
* calculate the t-tests and visualize them: *doStatistics.m*

Mixed Model:

* calculate powerspectrum for each drug: run *createPSForMixedModel.m*
  + this uses the function *calculatePowerForBands*
* calculate powerspectrum for normal data: run *prepareNormal.m*
  + set *medicine=’AllMixed’*
  + also excludes all files that contain any drugs
* create table: run *createTableMixedModel.m*
  + puts together powerspectrum tables for individual drugs and includes receptor properties from the file DrugReceptorProperties.xlsx
* include normal data in table: run *concatNormalAndFullTable.m*
* calculate different mixed models: run *fitMixedModel.m*
* further analysis and visualization done in R:
  + see folder R-files: run all files in folder
  + this calculates the estimated marginal means and visualizes the results