

Group Project  
Documentation: part 4

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Indexes for European Countries*  
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# Abstract

This document contains model descriptions for the engineering group diploma thesis entitled “Application for Analysis of the Economic Growth Indexes for European Countries”. It is a continuation of the previous document „Group Project Documentation: part 2”. The document is dedicated to a module containing clustering models, providing their descriptions, required parameters and exemplary results, as well as baseline evaluation and comparison. Furthermore, the application template and code with models implementation are an appendix to this part of the documentation.

## History of changes

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| --- | --- | --- | --- |
| **Date** | **Author** | **Description** | **Version** |
| 5.01.2021 | Agata Makarewicz | Template | 1.0 |
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# Vocabulary

**Homepage** - a webpage presented after turning on the application. It will have all of the functionalities like filtering data and generating the report.

**“Read about the project" page** – a webpage that will present all of the information about the project, authors and contact email addresses.

**Report –** content from homepage consisting of charts and results of clustering algorithms with comments.

**Clustering** - the task of dividing a set of objects into several groups called clusters in such a way that objects within the same cluster are more similar to each other than to objects in other clusters.

**Model** – machine learning algorithm used for clustering.

# Errata to Documentation Part 1 & 2

# Deployment documentation

???

# Installation instruction

* Install python 3.8/3.9
* Install R 3.6/4.0
* Add R\_LIBS\_USER to your user variables
  + (edit system variables) variable equal to path to R library (/path/to/directory/R/win-library/[version]) (C:\Users\agama\Documents\R\win-library\4.0)
* Create python virtual environment
  + Windows, run cmd as administrator, type *python -m venv /path/to/directory*
* clone git repository
  + [*https://github.com/amakarewicz/BEngThesis*](https://github.com/amakarewicz/BEngThesis)
* Enter the directory with the project
  + Still In cmd ran as administrator, enter main directory (BEngThesis)
* Run install\_requirements.sh file passing path to python env folder and path to R folder
  + install\_requirements.sh "{python\_path}" "{R\_path}" ex. “C:\Users\agama\Desktop\django\_testing\_2” “C:\Program Files\R\R-4.0.0”
* Run start\_app.sh file passing path to python.exe inside environment
  + start\_app.sh“C:\Users\agama\Desktop\django\_testing\_2\Scripts\python.exe”
* run 127.0.0.1:8000/homepage in your browser

# Acceptance tests

# User’s Manual

Dodać screeny z instrukcją co i jak klikać

# Bibliography

1. Aghabozorgi, Saeed, Shirkhorshidi, Ali S., and Wah, Teh Y. Time-series clustering – A decade review. Information Systems 53 16-38, 2015.
2. Gräbner, C., Heimberger, P., Kapeller, J., and Schütz B. Structural change in times of increasing openness: assessing path dependency in European economic integration. Journal of Evolutionary Economics 30, 1467–1495, 2020.
3. Bartlett, W. and Prica, I. Interdependence between Core and Peripheries of the European Economy: Secular Stagnation and Growth in the Western Balkans. LSE‘Europe in Question’ Discussion Paper Series, LEQS Paper No. 104/2016, 2016.
4. Hamilton, James Douglas Time Series Analysis. Princeton University Press, 1994.
5. Pal, Avishek, Prakash, PKS. Practical Time Series Analysis. Master Time Series Data Processing Visualization and Modelling Using Python. Packt, 2017
6. Fu-Lai Chung, Tak-Chung Fu, V. Ng and R. W. P. Luk, "An evolutionary approach to pattern-based time series segmentation," in IEEE Transactions on Evolutionary Computation, vol. 8, no. 5, pp. 471-489, Oct. 2004.
7. Scikit-learn developers (BSD License), Scikit-learn User Guide: 2.3 Clustering, 2007-2021, <https://scikit-learn.org/stable/modules/clustering.html>
8. Jeremy Zhang, Dynamic Time Warping. Explanation and code. 2020, Feb 1 <https://towardsdatascience.com/dynamic-time-warping-3933f25fcdd>
9. Xiaoji Wan, Hailin Li, Liping Zhang, Yenchun Jim Wu, "Multivariate Time Series Data Clustering Method Based on Dynamic Time Warping and Affinity Propagation", Wireless Communications and Mobile Computing, vol. 2021, Article ID 9915315, 8 pages, 2021. <https://doi.org/10.1155/2021/9915315>
10. Siebert, J.; Groß, J.; Schroth,C. A Systematic Review of Python Packages for Time Series Analysis.Eng. Proc. 2021, 5, 22. <https://doi.org/10.3390/engproc2021005022>
11. Julio-Omar Palacio-Nino, Fernando Berzal Evaluation Metrics for Unsupervised Learning Algorithms