

	<b>FORM FOR PROPOSING A TOPIC IN THE SECOND CYCLE OF STUDIES</b>	Oznaka	SAO-FENS.4.24.0-ENG
		Datum usvajanja	05.03.2019
		Datum/Br. revizije	-
		Stranica	1/1

Department	IT
Master thesis title:	Machine Learning model for predicting vaccine efficacy and reactogenicity
Mentor/professor - contact:	Samed Jukic

Thesis background:	<p>People receive vaccines in order to produce immunity to a specific disease. Sometimes those vaccines have side effect on some people. Some of the diseases that are vaccines used for and that will be processed in our machine learning model are tetanus, diphtheria, influenza, coronavirus.</p> <p>As well as machine learning model, this work will also include statistical analysis of vaccine efficacy and reactogenicity, the analysis why are some vaccines more efficient for certain population, immunity of the population and many similar statistics.</p> <p>On this website (<a href="https://data.world/datasets/immunization">https://data.world/datasets/immunization</a>) we have many datasets that can be used for this project. The most suitable will be picked.</p>
Thesis objective:	<p>Because of the specified behavior, this master thesis will deal with vaccine reactogenicity. During the analysis of the project field, we will decide which machine learning algorithm will be the most suitable.</p>
Literature:	<p>Gonzalez-Dias, P., Lee, E. K., Sorgi, S., de Lima, D. S., Urbanski, A. H., Silveira, E. L., &amp; Nakaya, H. I. (2020). Methods for predicting vaccine immunogenicity and reactogenicity. <i>Human vaccines &amp; immunotherapeutics</i>, 16(2), 269–276.  <a href="https://doi.org/10.1080/21645515.2019.1697110">https://doi.org/10.1080/21645515.2019.1697110</a></p> <p>Liao Y-C, Lee M-S, Ko C-Y, Hsiung CA. Bioinformatics models for pre-dicting antigenic variants of influenza A/ H3N2 virus. <i>Bioinformatics</i>.2008;24(4):505–12.</p> <p>Eva K. Lee &amp; Helder I. Nakaya &amp; Fan Yuan &amp; Troy D. Querec &amp; Greg Burel &amp; Ferdinand H. Pietz &amp; Bernard A. Benecke &amp; Bali Pulendran, 2016. "Machine Learning for Predicting Vaccine Immunogenicity," <i>Interfaces, INFORMS</i>, vol. 46(5), pages 368-390, October.</p> <p>Patrícia Gonzalez-Dias, Eva K. Lee, Sara Sorgi, Diógenes S. de Lima, Alysson H. Urbanski, Eduardo Lv Silveira &amp; Helder I. Nakaya (2020) Methods for predicting vaccine immunogenicity and reactogenicity, <i>Human Vaccines &amp; Immunotherapeutics</i>, 16:2, 269-276, DOI: 10.1080/21645515.2019.1697110</p> <p>A. Bell et al., "Proactive advising: a machine learning driven approach to vaccine hesitancy," 2019 IEEE International Conference on Healthcare Informatics (ICHI), Xi'an, China, 2019, pp. 1-6.</p>

	<b>FORM FOR PROPOSING A TOPIC IN THE SECOND CYCLE OF STUDIES</b>	Oznaka	SAO-FENS.4.24.0-ENG
		Datum usvajanja	05.03.2019
		Datum/Br. revizije	-
		Stranica	1/1

Department	IT
Master thesis title:	Sales Prediction in Automotive Industry in BiH
Mentor/professor - contact:	Samed Jukic

Thesis background:	<p>The aim of my Master Thesis is to use machine learning algorithms to predict sales data in automotive industry.</p> <p>I attend to use the real data from last 5 years (our company is existing since 2015).</p> <p>Prediction will be done per each brand (VW, Audi, Seat, Skoda and Porsche).</p> <p>This prediction can be seen very helpful from business side as they can plan to have enough certain vehicles on stock.</p>
Thesis objective:	<p>Usage of machine learning algorithms and big data technologies for understanding market demands in automotive area. This view and understanding demands can help companies to make better business decisions in order to stay competitive on market place. If forecasts are made accurate it may also help in promotion and marketing plans of the company by investing in promotion of specific models.</p>
Literature:	<p>Python Machine Learning 1st Edition, Kindle Edition by Sebastian Raschka</p> <p>Predictive Analytics For Dummies, by Dr. Anasse Bari, Mohamed Chaouchi, Tommy Jung</p> <p>B. Pavlyshenko, "Machine-learning models for sales timeseries forecasting," Data, vol. 4, no. 1, p. 15, 2019</p> <p>M. Singh, B. Ghutla, R. Lilo Jnr, A. F. S. Mohammed and M. A. Rashid, "Walmart's Sales Data Analysis - A Big Data Analytics Perspective," 2017 4th Asia-Pacific World Congress on Computer Science and Engineering (APWC on CSE), Nadi, 2017, pp. 114-119.</p> <p>R.R. Karthikeyan , Dr. B Raghu , "Simple analytics in Retail Sales Data using Hadoop". International Journal of Computer Trends and Technology (IJCTT) V58(1):14-19, April 2018. ISSN:2231-2803. www.ijcttjournal.org. Published by Seventh Sense Research Group.</p>

	<b>FORM FOR PROPOSING A TOPIC IN THE SECOND CYCLE OF STUDIES</b>	Oznaka	SAO-FENS.4.24.0-ENG
		Datum usvajanja	05.03.2019
		Datum/Br. revizije	-
		Stranica	1/1

Department	IT
Master thesis title:	Comparison of Model Based Collaborative Filtering Recommender Systems with Improvement Proposals
Mentor/professor - contact:	Samed Jukic

Thesis background:	<p>Collaborative Filtering recommendation systems are vastly successful in creating personalized recommendations in commercial applications. Model-based algorithms have been used to alleviate the scalability problems associated with memory-based recommender systems.</p>
Thesis objective:	<p>Objective is to compare currently most used algorithms for model based collaborative filtering recommender systems. Key factors of data analysis will be defined, its correlation to the user task and main prediction quality measurement factors. All the observations will be proved empirically resulting in improvement proposals.</p>
Literature:	<p>Recommender systems handbook - Francesco Ricci, Lior Rokach, Bracha Shapira, Paul B. Kantor</p> <p>Practical Recommender Systems - Kim Folk</p> <p>Collaborative Recommendations: Algorithms, Practical Challenges and Applications - Shlomo Berkovsky, Ivan Cantador, Domonkos Tikk</p> <p>Building Recommender Systems with Machine Learning and AI - Frank Kane</p>

	<b>FORM FOR PROPOSING A TOPIC IN THE SECOND CYCLE OF STUDIES</b>	Oznaka	SAO-FENS.4.24.0-ENG
		Datum usvajanja	05.03.2019
		Datum/Br. revizije	-
		Stranica	1/1

Department	IT
Master thesis title:	Depression and Anxiety Analysis and Prediction using Big Data Technologies
Mentor/professor - contact:	Samed Jukic

Thesis background:	<p>Anxiety and depression are the most common mental health disorders. In the U.S., approximately 19 million people suffer from anxiety and 18 million from depression. Additionally, it is estimated that about 85 percent of Americans with depression also suffer from an anxiety disorder, and almost 54 percent of people with an anxiety disorder also have major depression. Depression and anxiety affect the life of many individuals and if the diagnosis is not stated in time it could lead to considerable health decline and even suicide. These health issues are closely related to Big Data. 'Big data' are accumulating in a multitude of domains and offer novel opportunities for research. Big data refers to specific data sets that are extremely large and very complex. They differ from traditional data sets in their volume, velocity and variety, in addition to their complexity and potential influence on human decision-making processes, obtained by providing usable and accurate data in a short amount of time. Big data analysis is proving to be a useful tool to deepen our general understanding of human behavior. Since it can process and analyze massive quantities of information, it's able to combine a large volume and variety of personal transactions from social media, as well as more scientific sensors and monitoring information. Consequent big data analysis can offer a very realistic up to date insight into human behavior that was previously very difficult to recognize.</p>
Thesis objective:	<p>Big data has come to mood disorders care in a big way. Large registries are being compiled for research purposes, and patient communities are growing that help patients cope with their conditions and help researchers collect huge amounts of data. Based on cognitive-behavioral therapy combined with relaxation and wellness techniques, we believe in holistic daily tools aimed at breaking the anxiety cycle. By using large sets of information, researchers and health professionals can identify patterns</p>

	<b>FORM FOR PROPOSING A TOPIC IN THE SECOND CYCLE OF STUDIES</b>	Oznaka	SAO-FENS.4.24.0-ENG
		Datum usvajanja	05.03.2019
		Datum/Br. revizije	-
		Stranica	1/1

	<p>that are typically more difficult to detect. During the work on this project, I will define Big Data techniques and technologies for analysing data in dataset. Big Data Analytics is mainly predictive in nature. The predictive modeling of data analytics helps with the mental illness diagnosis and the state of despair that it has reached. In conclusion, my master research will show how Big Data helps in detecting and analysing depression and anxiety cases, and how it helps in finding solutions for these problems. The role of these resources in mental health investigations remains relatively unexplored, although a number of datasets are in use and supporting a range of projects.</p>
Literature:	<p>[1] ewart R, Davis K. 'Big data' in mental health research: current status and emerging possibilities. <i>Soc Psychiatry Psychiatr Epidemiol.</i> 2016;51(8):1055–72</p> <p>[2] Budiyanto, Setiyo; Sihombing, Harry Candra; Rahayu, Fajar I M. Depression and anxiety detection through the Closed-Loop method using DASS-21 <i>TELKOMNIKA; Yogyakarta Vol. 17, Iss. 4, (Aug 2019): 2087-2097. DOI:10.12928/TELKOMNIKA.v17i4.12619</i></p> <p>[3] Raghupathi W, Raghupathi V (2014) Big data analytics in healthcare: promise and potential.</p> <p>[4] Perera G, Soremekun M, Breen G, Stewart R (2009) The psychiatric case register: noble past, challenging present, but exciting future.</p> <p>[5] Tekin, Ş. Is Big Data the New Stethoscope? Perils of Digital Phenotyping to Address Mental Illness. <i>Philos. Technol.</i> (2020). <a href="https://doi.org/10.1007/s13347-020-00395-7">https://doi.org/10.1007/s13347-020-00395-7</a></p> <p>* Literature will be updated as the research moves on.</p>

	<b>FORM FOR PROPOSING A TOPIC IN THE SECOND CYCLE OF STUDIES</b>	Oznaka	SAO-FENS.4.24.0-ENG
		Datum usvajanja	05.03.2019
		Datum/Br. revizije	-
		Stranica	1/1

Department	IT
Master thesis title:	Recommendation engine on IPTV platform
Mentor/professor - contact:	Samed Jukic

Thesis background:	<p>The rapid growth of data collection has led to a new era of information. Data is being used to create more efficient systems and this is where recommendation engine come into play. Recommendation engine are a type of information filtering systems as they improve the quality of search results and provides items that are more relevant to the search item or are related to the search history of the user. They are used to predict the rating or preference of the user on iptv platform.</p> <p>As well as machine learning model, this work will also include analysis of major recommendation system types, performance comparison of popular systems. Also, analysis of some popular iptv platforms with their recommendation engine.</p>
Thesis objective:	During the analysis of the project field, we will decide which machine learning algorithm will be the most suitable.
Literature:	<p>Amolochitis, E., Christou, I. T., &amp; Tan, Z.-H. (2014). <i>Implementing a Commercial-Strength Parallel Hybrid Movie Recommendation Engine</i>. <i>IEEE Intelligent Systems</i>, 29(2), 92–96. doi:10.1109/mis.2014.23</p> <p>Y. Koren, R. Bell, and C. Volinsky. <i>Matrix Factorization Techniques for Recommender Systems</i>. <i>Computer</i>, 42(8):30–37, August 2009.</p> <p>Kyusik Park, Jongmoo Choi, and Donghee Lee (2010). <i>A Single-Scaled Hybrid Filtering Method for IPTV Program Recommendation</i></p> <p>Krešimir Pripužić, Ivana Podnar Žarko, Vedran Podobnik, Ignac Lovrek, Marko Čavka (2013). <i>Building an IPTV VoD recommender system: An experience report</i></p> <p>Linden, G., Smith, B., &amp; York, J. (2003). <i>Amazon.com recommendations: item-to-item collaborative filtering</i>. <i>IEEE Internet Computing</i>, 7(1), 76–80. doi:10.1109/mic.2003.1167344</p>