

FYP Project 2023 Topics – Dr. Wentao Fan

Email : wentaofan@uic.edu.cn office : T6-403-R1

Index	1
Title	Fake News Detection on Social Media Based on Machine Learning Models
Supervisor	Dr. Wentao Fan
No. of Students	2
Prerequisites	Machine Learning
Description	<p>Social media for news consumption is a double-edged sword. On the one hand, its low cost, easy access, and rapid dissemination of information lead people to seek out and consume news from social media. On the other hand, it enables the wide spread of “fake news”, i.e., low quality news with intentionally false information. The extensive spread of fake news has the potential for extremely negative impacts on individuals and society. Therefore, fake news detection on social media has recently become an emerging research that is attracting tremendous attention.</p> <p>The aim of this final year project is to apply two or three machine learning models to detect fake news on social media. It is also required to analyze the performance of the models by conducting experiments on fake news data sets.</p>
References	<p>[1]. Xinyi Zhou and Reza Zafarani. “A Survey of Fake News: Fundamental Theories, Detection Methods, and Opportunities”. ACM Comput. Surv. 53, 5, Article 109, 2020</p> <p>[2]. M. K. Elhadad, K. Fun Li and F. Gebali, "Fake News Detection on Social Media: A Systematic Survey," 2019 IEEE Pacific Rim Conference on Communications, Computers and Signal Processing (PACRIM), Victoria, BC, Canada, 2019, pp. 1-8</p> <p>[3]. S. Kumar, S. Kumar, P. Yadav and M. Bagri, "A Survey on Analysis of Fake News Detection Techniques," 2021 International Conference on Artificial Intelligence and Smart Systems (ICAIS), Coimbatore, India, 2021, pp. 894-899</p> <p>[4]. Kai Shu, Amy Sliva, Suhang Wang, Jiliang Tang, and Huan Liu. “Fake News Detection on Social Media: A Data Mining Perspective”. SIGKDD Explor. Newsl. 19, 1 (June 2017), 22–36.</p> <p>[5]. N. F. Baarir and A. Djeflal, "Fake News detection Using Machine Learning," 2020 2nd International Workshop on Human-Centric Smart Environments for Health and Well-being (IHSH), Boumerdes, Algeria, 2021, pp. 125-130</p>

FYP Project 2023 Topics – Dr. Wentao Fan

Email : wentaofan@uic.edu.cn office : T6-403-R1

Index	2
Title	Traffic Sign Recognition Based on Artificial Neural Networks
Supervisor	Dr. Wentao Fan
No. of Students	2
Prerequisites	Machine Learning
Description	<p>Traffic sign recognition is the process of automatically recognizing traffic signs along the road, including speed limit signs, yield signs, merge signs, etc. The traffic sign recognition project is useful for all autonomous vehicles. Self-driving cars need traffic sign recognition in order to properly parse and understand the roadway, and being able to automatically recognize traffic signs enables us to build “smarter cars”.</p> <p>The aim of this final year project is to build an artificial neural network (such as Convolutional Neural Network, etc.) that will take images of the traffic symbols as input and return the recognized labels of that traffic sign.</p>
References	<p>[1]. M. -Y. Fu and Y. -S. Huang, "A survey of traffic sign recognition," 2010 International Conference on Wavelet Analysis and Pattern Recognition, Qingdao, China, 2010, pp. 119-124</p> <p>[2]. Saadna, Y., Behloul, A. An overview of traffic sign detection and classification methods. Int J Multimed Info Retr 6, 193–210 (2017)</p> <p>[3]. Staravoi tau, A. Traffic Sign Classification with a Convolutional Network. Pattern Recognit. Image Anal. 28, 155–162 (2018)</p> <p>[4]. Dan Cireşan, Ueli Meier, Jonathan Masci, Jürgen Schmidhuber, Multi-column deep neural network for traffic sign classification, Neural Networks, Volume 32, 2012, Pages 333-338.</p> <p>[5]. H. Luo, Y. Yang, B. Tong, F. Wu and B. Fan, "Traffic Sign Recognition Using a Multi-Task Convolutional Neural Network," in IEEE Transactions on Intelligent Transportation Systems, vol. 19, no. 4, pp. 1100-1111, April 2018</p>

FYP Project 2023 Topics – Dr. Wentao Fan

Email : wentaofan@uic.edu.cn office : T6-403-R1

Index	3
Title	Video Anomaly Detection Based on Machine Learning Models
Supervisor	Dr. Wentao Fan
No. of Students	2
Prerequisites	Machine Learning
Description	<p>Video anomaly detection is an important application of computer vision that involves the detection of unusual events or behaviors in video data. In particular, the rise of surveillance technology has enabled us to capture vast amounts of video data in public spaces, from cameras mounted on buildings, roads, and other infrastructure. The challenge, however, is to make sense of this data and detect unusual events that could be indicative of criminal activity, accidents, or other types of anomalies.</p> <p>The aim of this project is to develop a video anomaly detection method based on machine learning models that can automatically identify unusual events in video streams. This method will have the potential to improve public safety and security by enabling early intervention and response to potential threats.</p>
References	<p>[1]. https://github.com/fjchange/awesome-video-anomaly-detection</p> <p>[2]. B. Ramachandra, M. J. Jones and R. R. Vatsavai, "A Survey of Single-Scene Video Anomaly Detection," in IEEE Transactions on Pattern Analysis and Machine Intelligence, vol. 44, no. 5, pp. 2293-2312, 1 May 2022</p> <p>[3]. K. Nithesh, N. Tabassum, D. D. Geetha and R. D. A. Kumari, "Anomaly Detection in Surveillance Videos Using Deep Learning," 2022 International Conference on Knowledge Engineering and Communication Systems (ICKES), 2022, pp. 1-6</p> <p>[4]. Kiran, B.R.; Thomas, D.M.; Parakkal, R. An Overview of Deep Learning Based Methods for Unsupervised and Semi-Supervised Anomaly Detection in Videos. J. Imaging 2018, 4, 36.</p> <p>[5]. Sijie Zhu and Chen Chen and Waqas Sultani, Video Anomaly Detection for Smart Surveillance, arXiv:2004.00222, 2020</p>