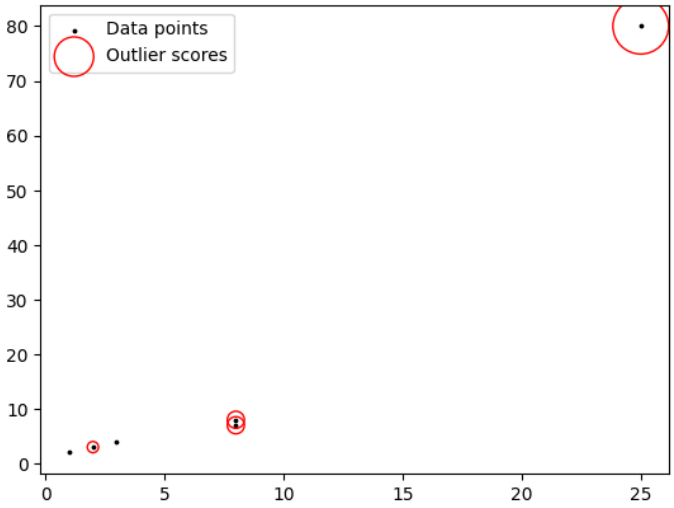
Unit 12, Future of Machine Learning

Paper: Diez-Olivan, A., Del Ser, J., Galar, D. and Sierra, B. (2019). 'Data fusion and machine learning for industrial prognosis: Trends and perspectives towards Industry 4.0', Information Fusion, 50, pp. 92-111. Available at: https://doi.org/10.1016/j.inffus.2018.10.005

Predictive – Local Outlier Factor (LOF).

As mentioned by Diez-Olivan et al (2019), LOF is a predictive prognosis, where '*It utilizes a variety of data fusion, statistical, modeling, and machine learning techniques to study recent and historical data, to learn prognostic models, which make accurate predictions about the future status of the monitored asset'*.

LOF is an algorithm designed to identify outliers in a dataset by measuring the local density deviation of a given data point with respect to its neighbours. This method is particularly useful for detecting anomalies in datasets where the outliers are not uniformly spaced but exist in varying densities.



Local Outlier Factor (LOF) is a highly valuable tool in the cybersecurity sector, particularly for monitoring unusual activities that could indicate security threats or fraudulent actions. Its ability to detect anomalies makes it indispensable for safeguarding financial transactions. LOF can uncover potentially fraudulent transactions that might otherwise go unnoticed. According to a report, £1.17 billion was lost to fraud in 2023 (UK Finance 2024).

This proactive detection helps in preventing financial losses and protecting sensitive financial information. Consequently, implementing LOF enhances the overall security framework by providing a robust mechanism for early detection and response to potential threats, thereby safeguarding both financial and informational assets.

References -

UK Finance. (2024). Annual Fraud Report 2024. Retrieved from https://www.ukfinance.org.uk/policy-and-guidance/reports-and-publications/annual-fraud-report-2024.