INTERNSHIP: STUDENT DAILY REPORT

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| Name of the Student | Vivek kumar Shriwas |
| Internship Project Topic | TCS iON RIO-125: Forecasting System - Project Demand of Products at a Retail Outlet Based on Historical Data |
| Name of the Organization | TCS iON |
| Name of the Industry Mentor | Sreekathiayini Ruthraiyah |
| Name of the Institute | Viswakarma University |

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| Date | Day | Hours Spent |
| 30/07/2023 | Day 13 | 3 hours and 45 minutes |
| Description:  **Self-learning Duration : 3 hours**  **Activity Report Duration : 45 minutes**  **Activities:**   1. **Exploring Time Series Decomposition (1 hour):**    * Dived into time series decomposition techniques to break down a time series into its components: trend, seasonality, and residual.    * Explored the additive and multiplicative decomposition methods and their use cases.    * Studied how decomposition can help in understanding underlying patterns and anomalies. 2. **Implementing Seasonal Decomposition in Python (1 hour):**    * Implemented seasonal decomposition of time series (STL) using the **statsmodels** library in Python.    * Decomposed a sample time series into trend, seasonal, and residual components.    * Visualized the decomposed components to gain insights into the individual aspects. 3. **Analyzing Residuals and Anomalies (1 hour):**    * Analyzed the residual component obtained after decomposition to identify any remaining patterns or anomalies.    * Explored techniques to detect anomalies in time series data using residual analysis.    * Experimented with different anomaly detection thresholds and observed their impact. 4. **Reviewing Seasonal Adjustment Methods (30 minutes):**    * Researched various methods used for seasonal adjustment in time series analysis.    * Explored how seasonal adjustment can help in removing the seasonal component, making underlying trends more visible.    * Took notes on the pros and cons of different seasonal adjustment approaches. 5. **Updating Learning Journal (15 minutes):**    * Added a new entry to the learning journal summarizing the exploration of time series decomposition.    * Included visualizations and insights gained from decomposing a sample time series.    * Documented the challenges faced during the implementation and analysis.   **Challenges:** One of the challenges encountered during the implementation was interpreting the residual component of the decomposition. Understanding whether certain patterns in the residuals were meaningful or simply noise required careful consideration and further research. | | |