

# Analysis of Monthly Fish Births in the Pacific



Time Series Exam

1968-87

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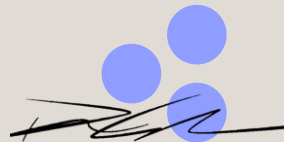
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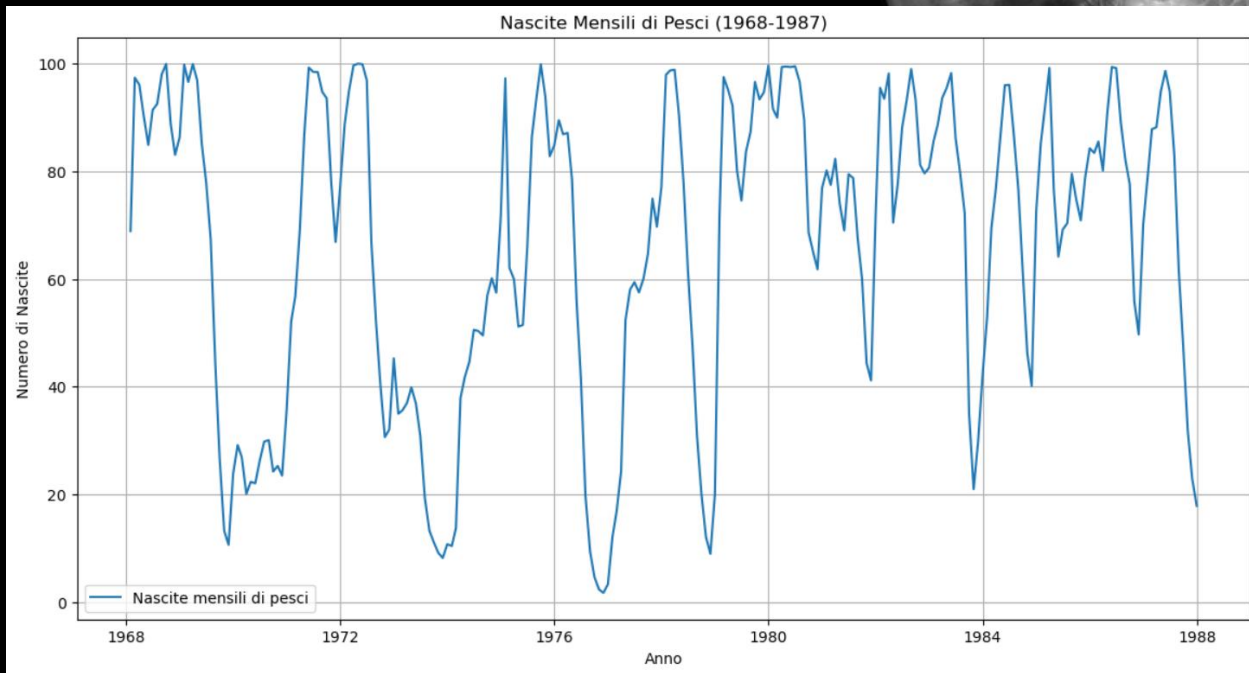
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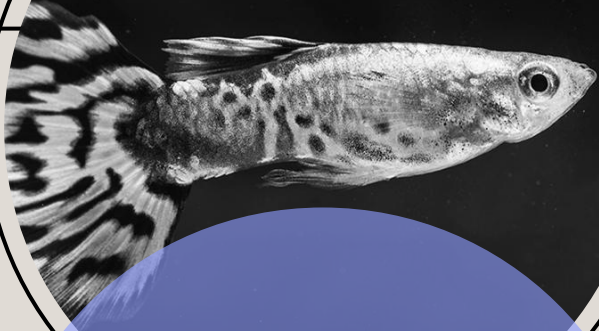


# Original Timeseries

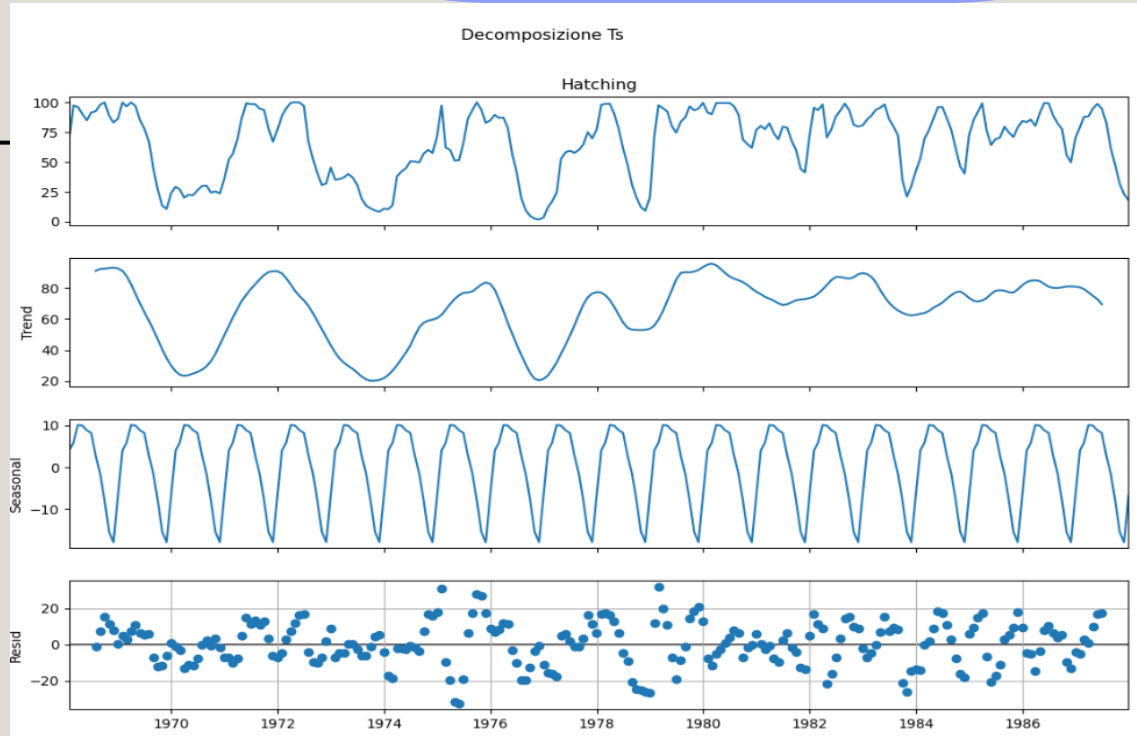
We notice a cyclical  
trend repeating every  
year.



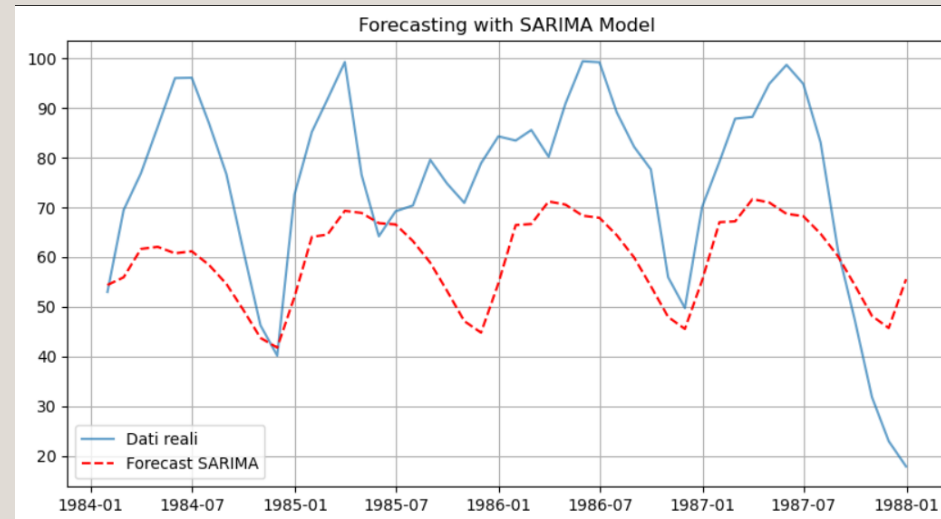
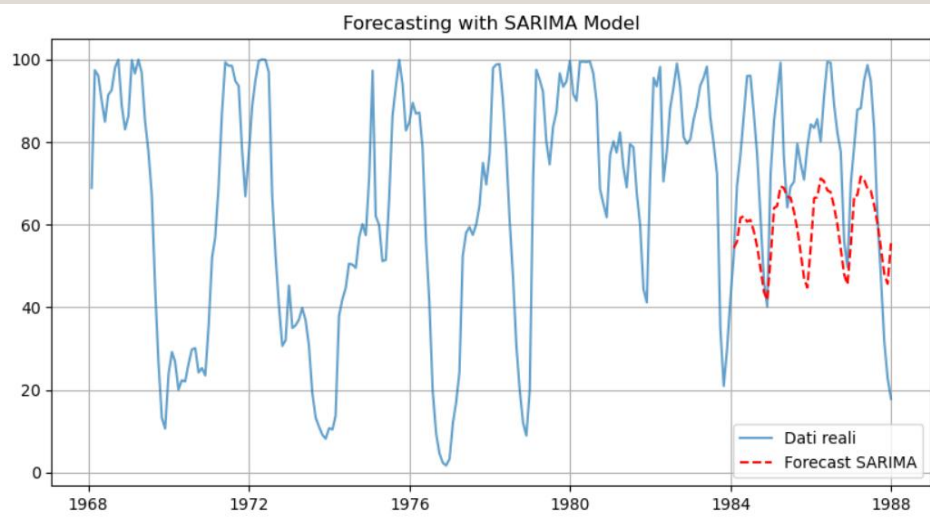
# 01 – Decomposition and ADF



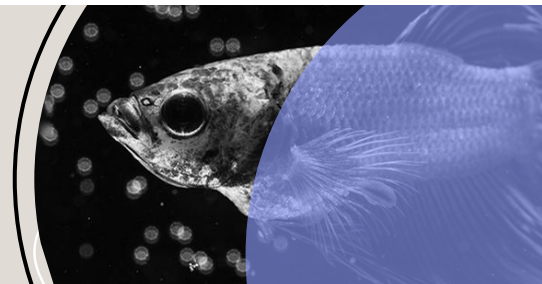
ADF Statistic: -4.608  
p-value: 0.000



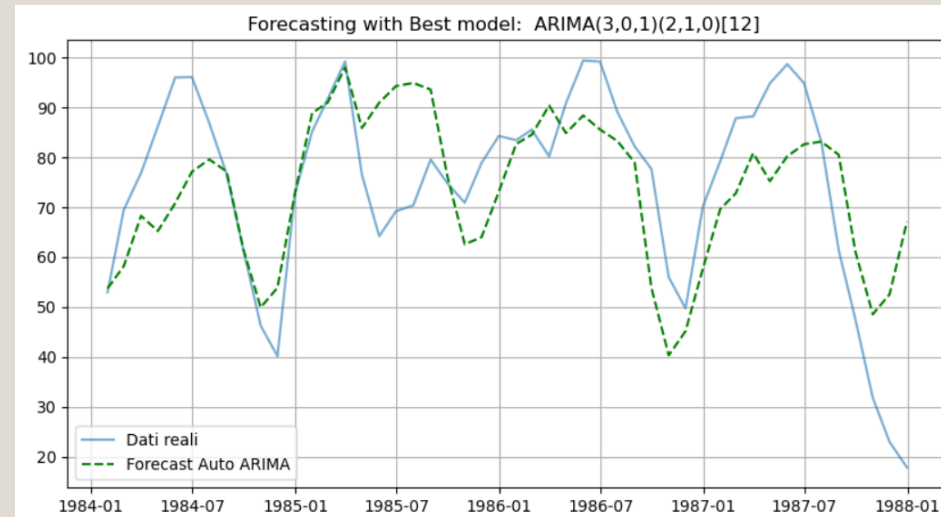
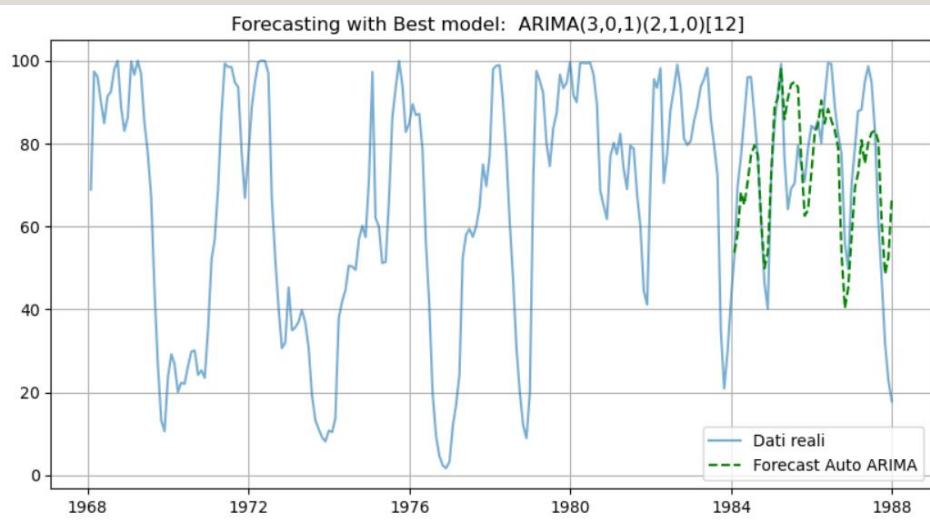
## 02 – SARIMA



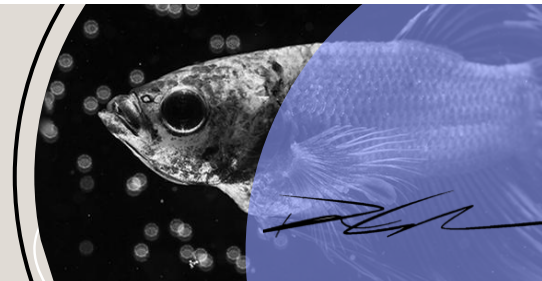
We chose the SARIMA model because it is specifically designed to handle data with a certain seasonality.



## 02 – Auto Arima



As you can see, the model captures the trend and seasonality with remarkable precision.



## 03 – Calcolo dell'Errore

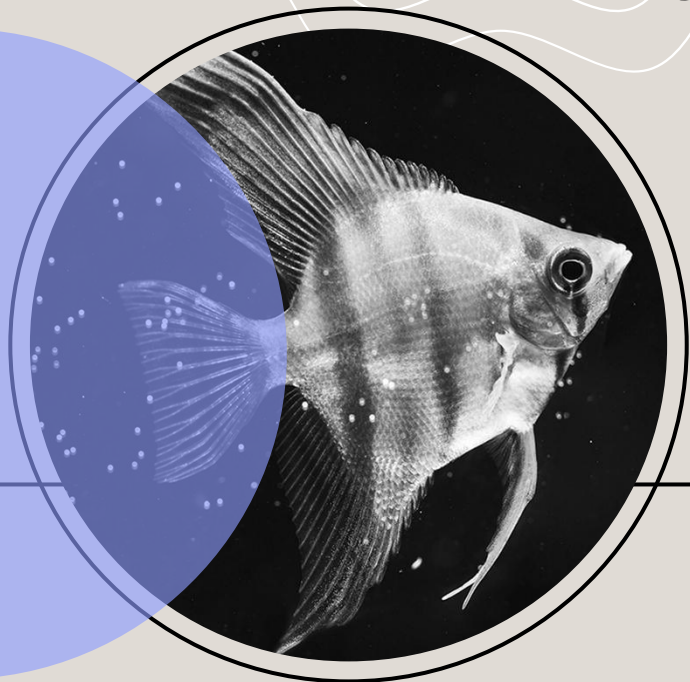
We have a predictive model that is not only functional but also quantifiably accurate.

MAE: 18.71

MSE: 452.04

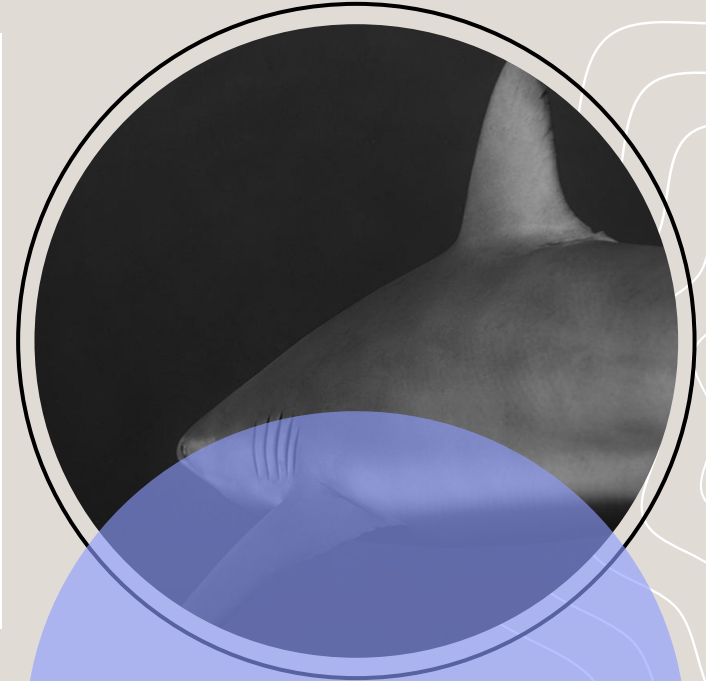
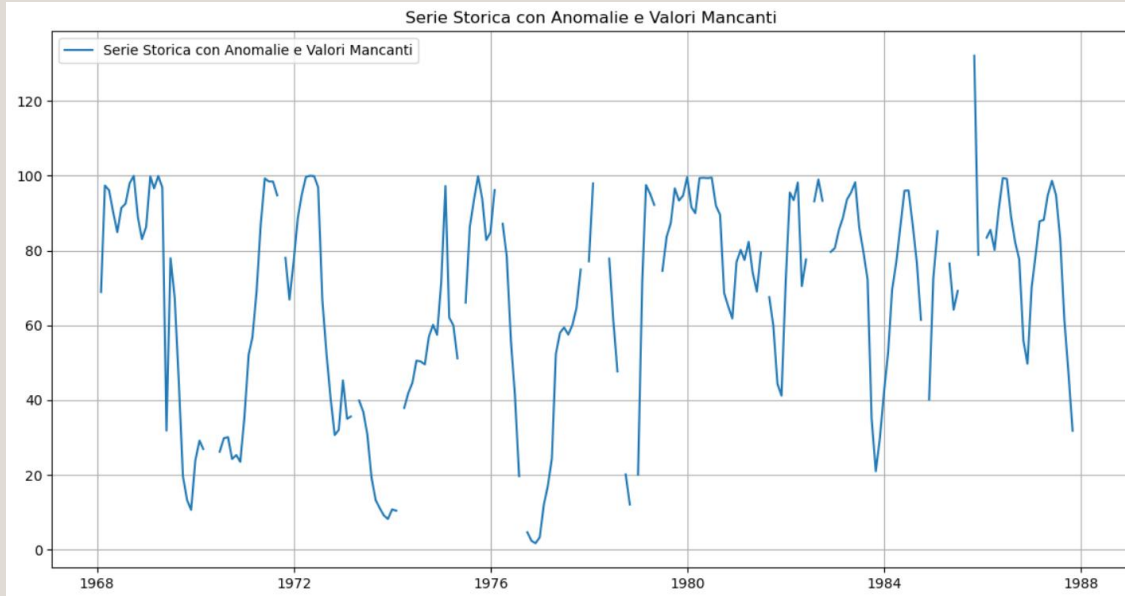
MAE Auto ARIMA: 11.89

MSE Auto ARIMA: 237.63





# 04 – Anomalies and missing Values

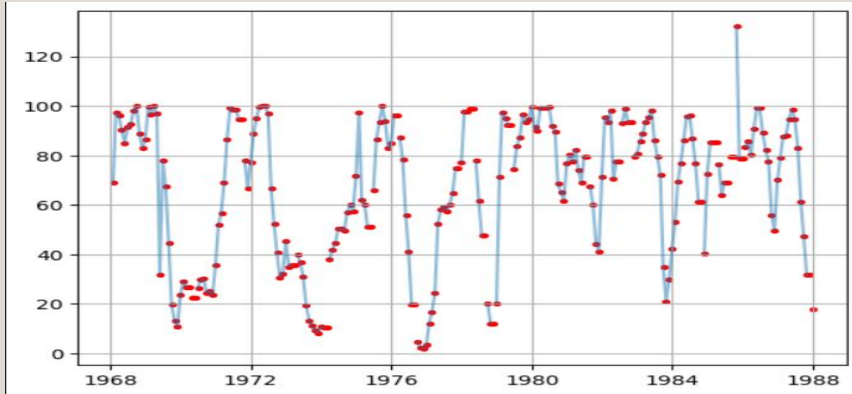


Handwritten signature or mark.

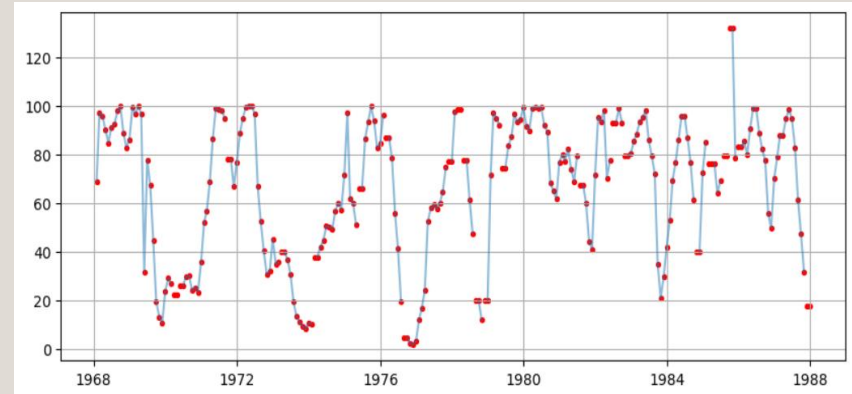


# 04 – Anomalies and missing Values

## Forward Filling

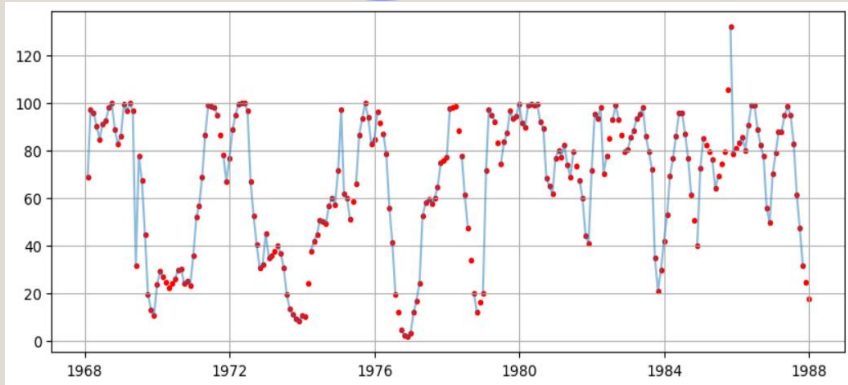


## Backward Filling

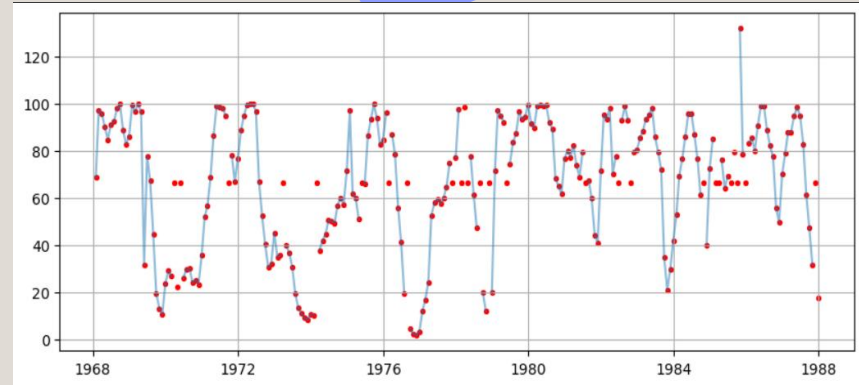


# 04 – Anomalies and missing Values

## Quadratic Interpolation



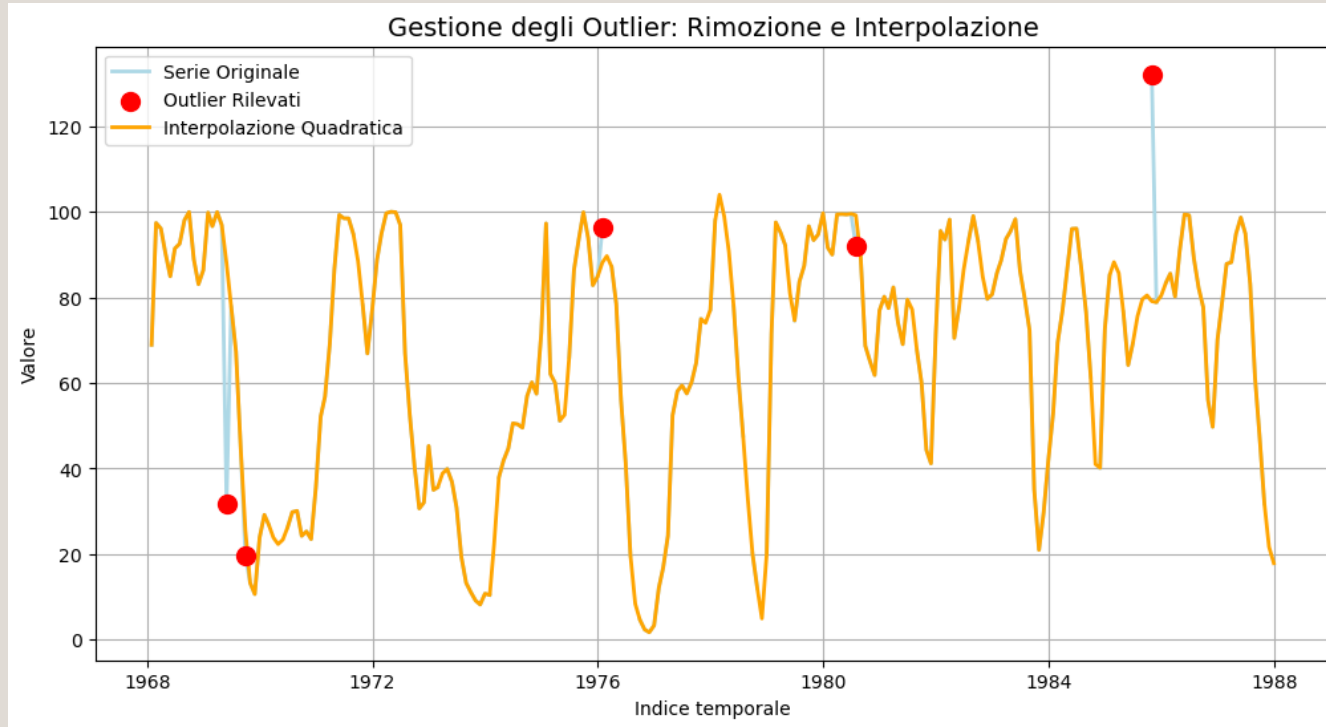
## Mean Value



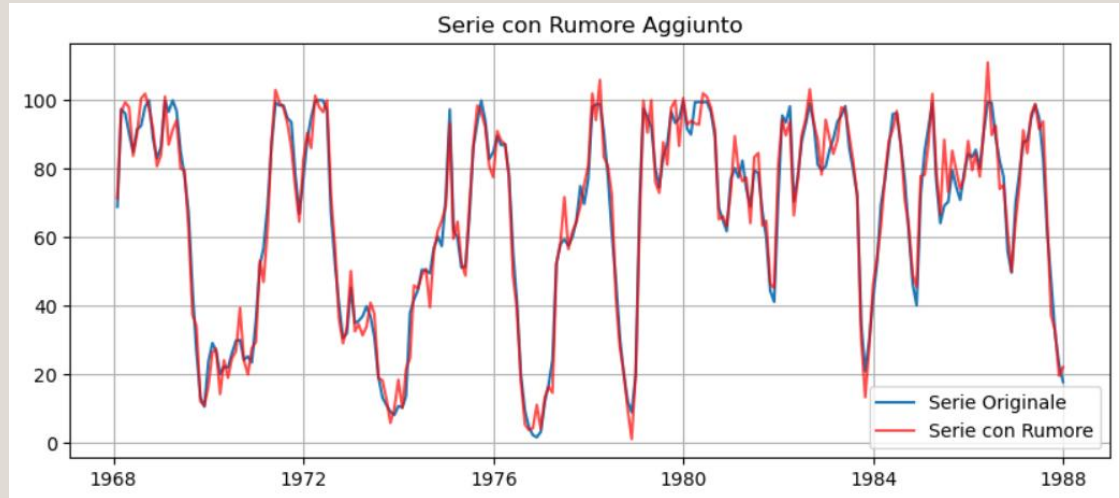
**Best Choise**

# 04 – Anomalies and missing Values

## Quadratic Interpolation



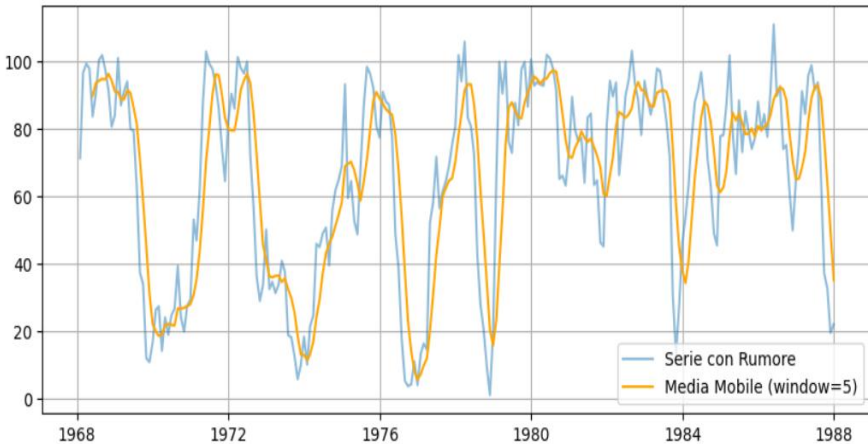
# 05 – Noise Management



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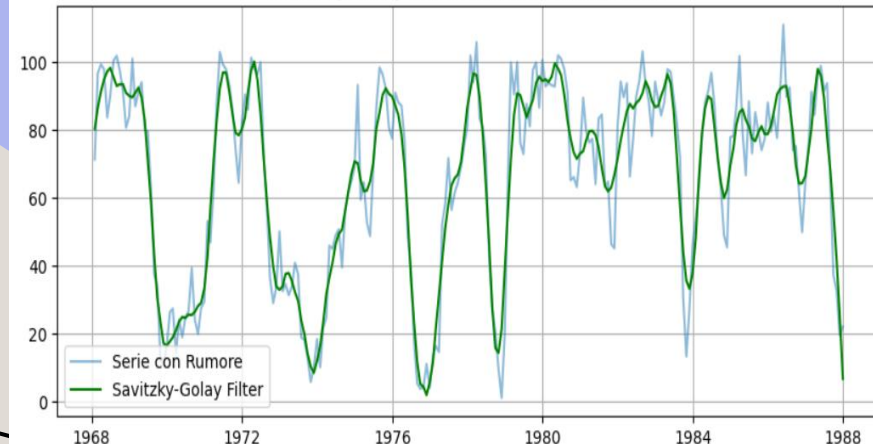
## Moving Average

Media Mobile della Serie con Rumore

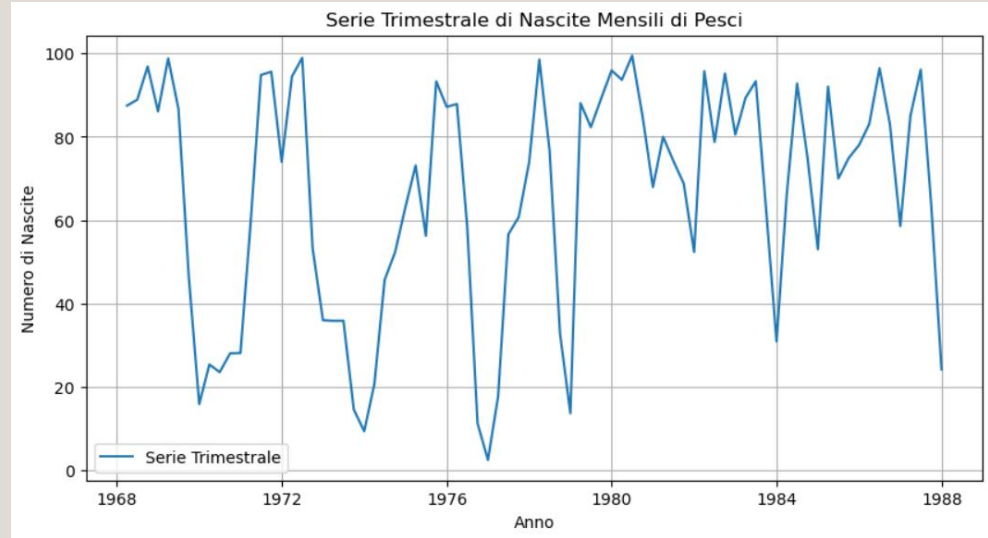
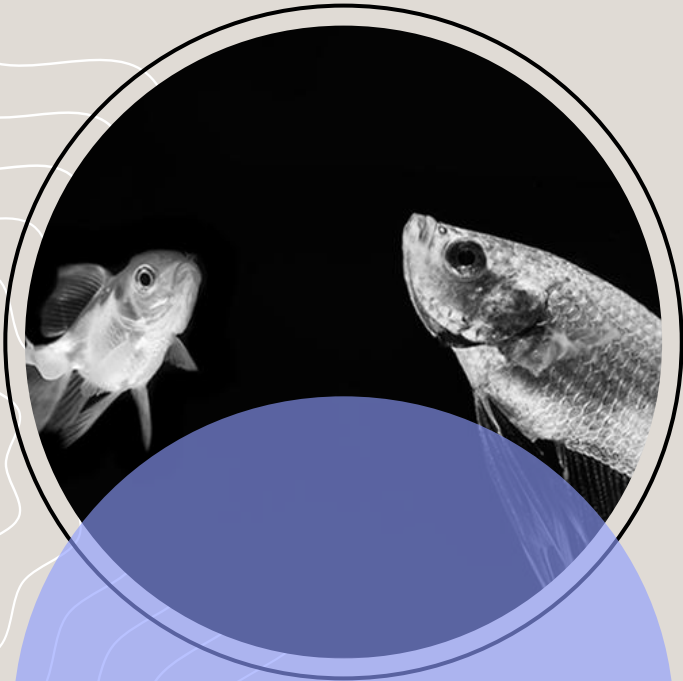


## Savitzky-Golay Filter

Savitzky-Golay Filter della Serie con Rumore

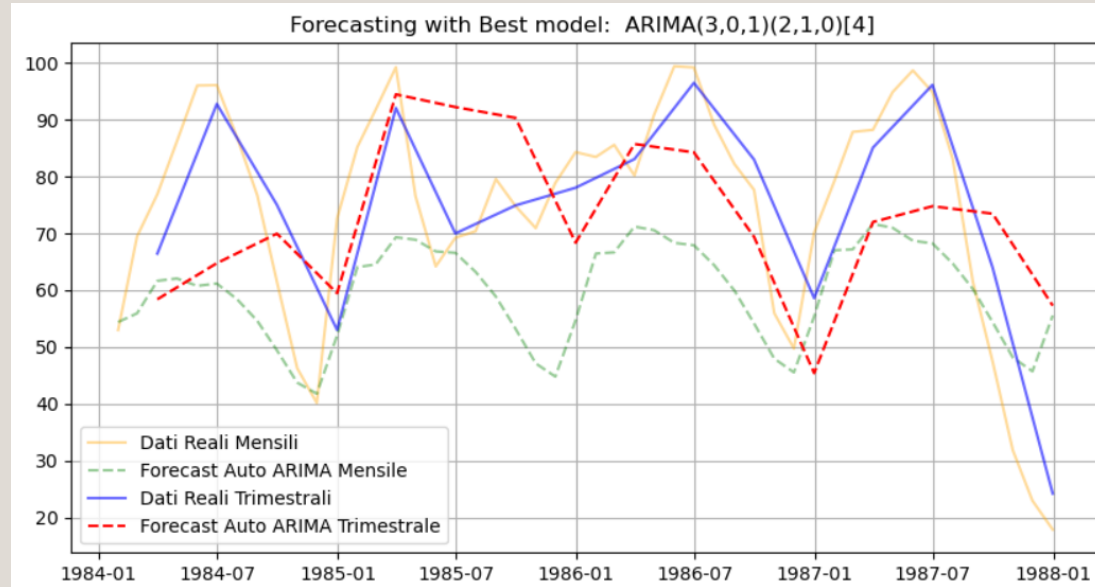
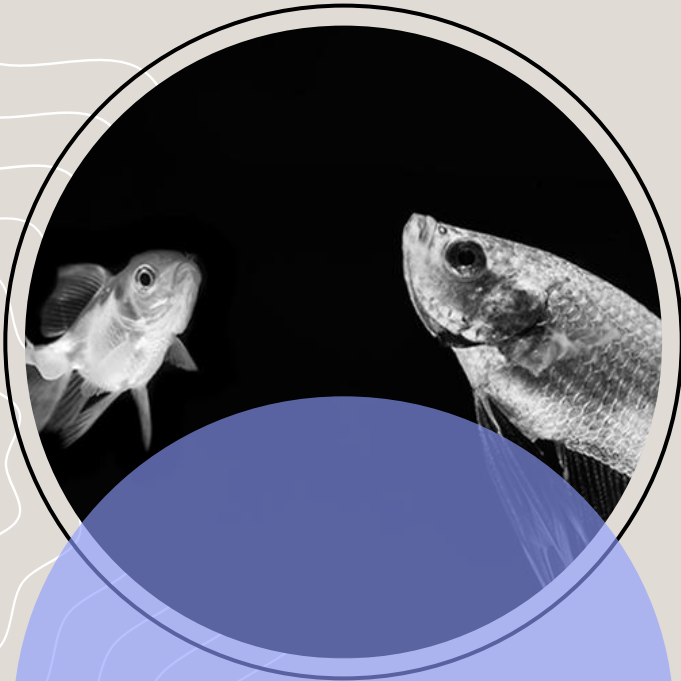


# o6 – Quarterly Forecast



MAE Trimestrale: 13.50  
MAE Originale: 18.71

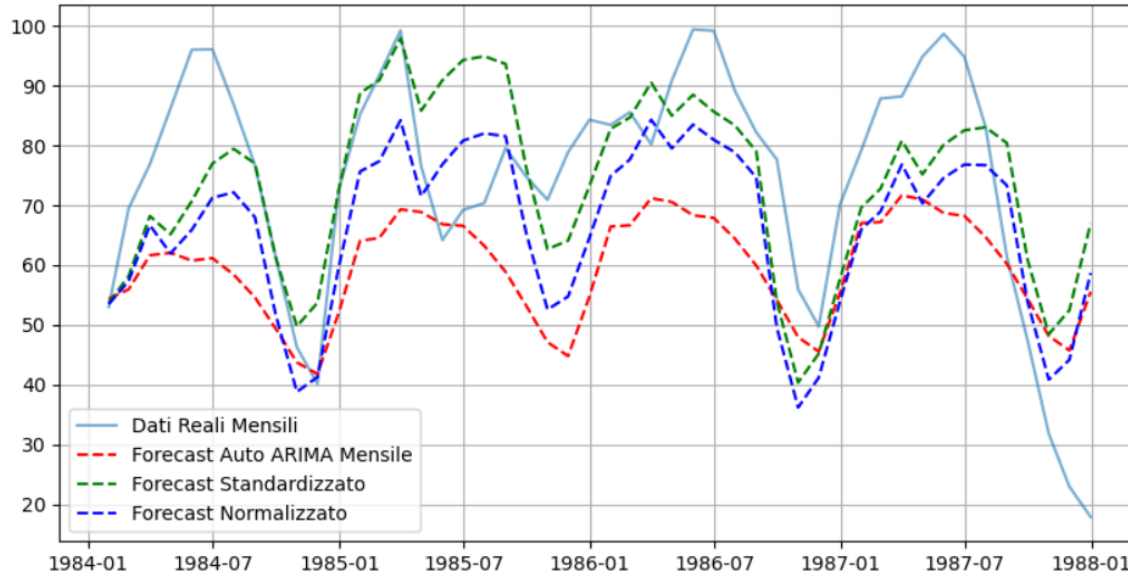
# o6 – Quarterly Forecast



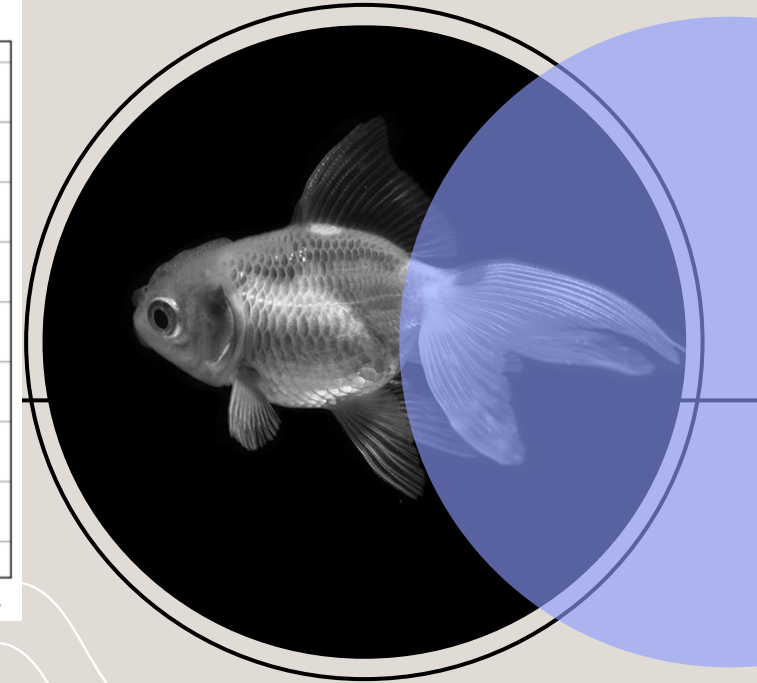


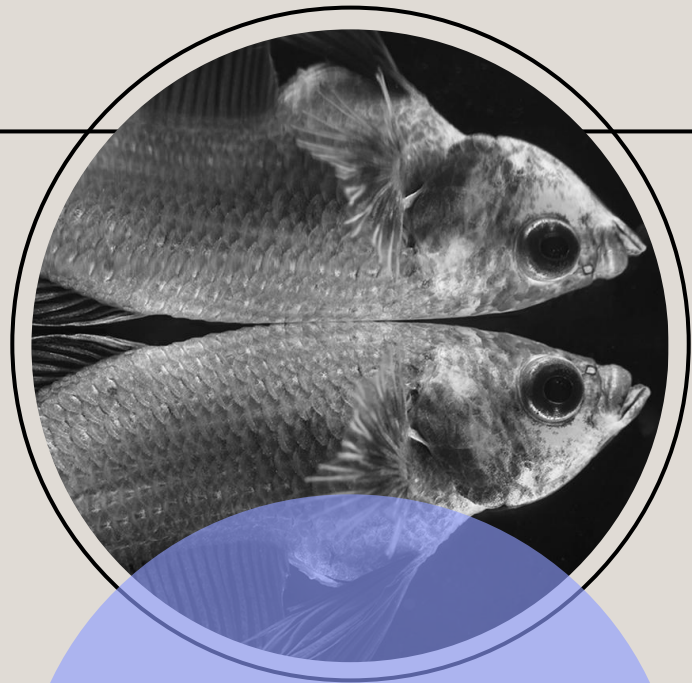
# 07 – Standardization and Normalization

Confronto Forecasting con Standardizzazione e Normalizzazione



MAE Originale: 18.71  
MAE Standardizzato: 11.87  
MAE Normalizzato: 14.01





**Thank you for  
your attention**