

Cash Forecasting in FP&A - How AI can help



Traditional



AI- Driven

a. Define Objective and Forecast Horizon

- Short-Term (1-13 weeks): Focus on operational liquidity.
- Medium-Term (3-12 months): Supports working capital and treasury decisions.
- Long-Term (1-5 years): Strategic planning and funding decisions.

b. Gather Data

- Collect historical data, typically:
- Accounts Receivable (collections patterns)
- Accounts Payable (payment schedules)
- Payroll and other fixed costs
- Capital expenditures
- Debt repayments and interests
- Other operating inflows and outflows

c. Build Assumptions

- Payment terms, DSO (Days Sales Outstanding), DPO (Days Payables Outstanding)
- Seasonality impacts
- Revenue growth projections
- Operational expansion or contraction

d. Model the Forecast

- Direct Method: Cash receipts and disbursements.
- Indirect Method: Starts from net income, adjusts for non-cash items and changes in working capital.

FP&A teams can augment their cash forecasting accuracy and speed by using AI and machine learning (ML) methods. Python provides excellent libraries and tools for this.

a. Benefits

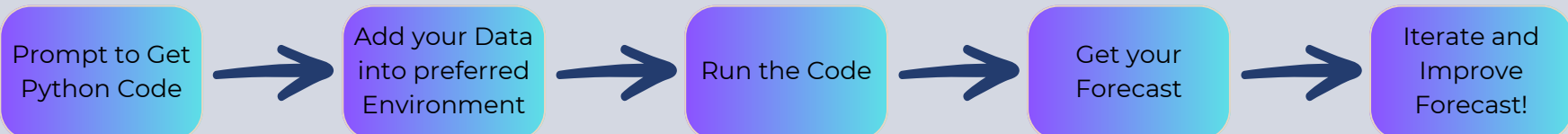
- Automate data ingestion and preprocessing
- Detect hidden patterns and seasonality
- Predict cash drivers more accurately
- Update forecasts automatically as new data comes in

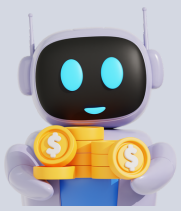
b. Key Python Libraries

- **pandas**: Data manipulation
- **numpy**: Numerical operations
- **scikit-learn**: Machine learning models
- **statsmodels**: Time series forecasting
- **prophet (Meta/Facebook)**: Easy and interpretable time series forecasting
- **xgboost / lightgbm**: Advanced gradient boosting models for complex patterns



Key Workflow to start using AI for this





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1. Prompt to Get Python Code

Specification

Define the specific task and objective

Generate Python code to forecast cash flow using machine learning. I want to predict future cash balances and identify key cash flow drivers. I will be using Google Colab and my data is in an Excel file called Cash_Data_Final_v2. My data looks like:

*****add column names and 5 first rows of data here*****

Use a machine learning model (XGBoost or Random Forest) to forecast cash_balance for the next 3 months. Include feature importance to understand which drivers (AR, AP, payroll, revenue) influence cash most. Plot actual vs predicted cash balances. Output the forecast as an Excel file called Cash_Forecast_AI

Describe the type of analysis or visualization needed

Analysis

Workspace

Mention the platform used (Google Colab) and environment

Provide the data source and a sample of the data structure

Template

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2. Add your Data into preferred environment

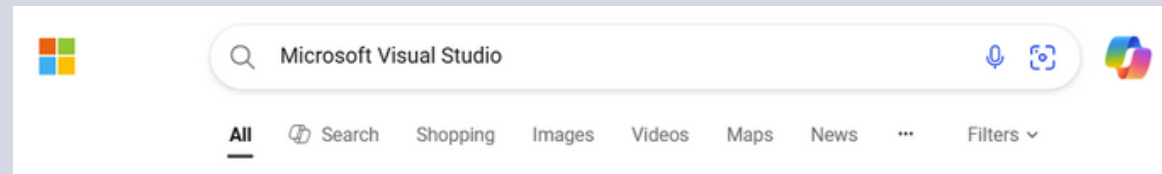
There are several Ways to Run Python Code.



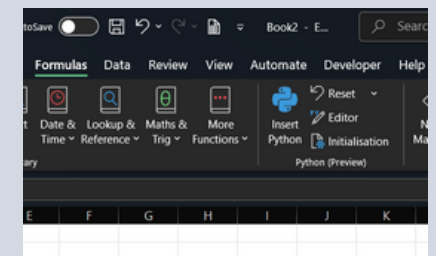
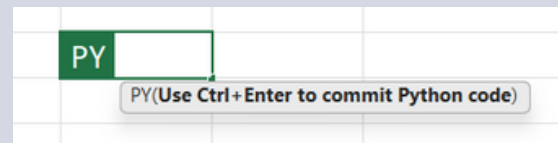
Easiest to Start ↓



If you run on Microsoft ↓



If you prefer to stay in Excel ↓





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3. Run the Code

Steal my 3 Python Code Templates and use the power of AI Straight Away!

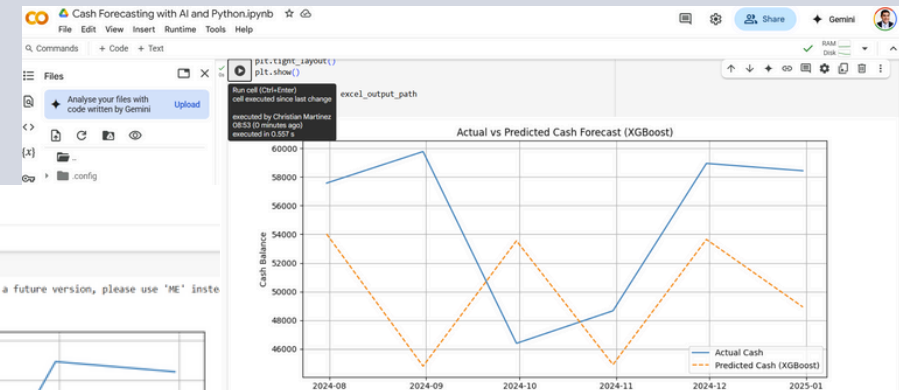
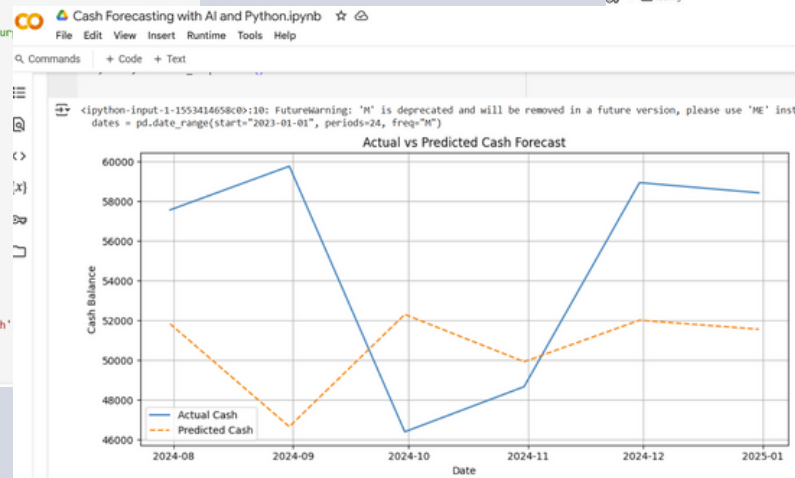
```
Cash Forecasting with AI and Python.ipynb
File Edit View Insert Runtime Tools Help

[1] import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
from sklearn.ensemble import RandomForestRegressor
from sklearn.model_selection import train_test_split
from sklearn.metrics import mean_absolute_error, mean_squared_error

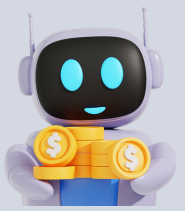
# Generate testing data (replace this with your dataset, this is for educational purposes)
np.random.seed(42)
dates = pd.date_range(start="2023-01-01", periods=24, freq="M")
data = pd.DataFrame({
    'date': dates,
    'cash_balance': np.random.randint(40000, 60000, size=24),
    'accounts_receivable': np.random.randint(8000, 15000, size=24),
    'accounts_payable': np.random.randint(5000, 10000, size=24),
    'payroll': np.random.randint(9000, 11000, size=24),
    'revenue': np.random.randint(25000, 40000, size=24)
})

# Feature Engineering
data['month'] = data['date'].dt.month
data['quarter'] = data['date'].dt.quarter
data['cash_lag_1'] = data['cash_balance'].shift(1)
data.dropna(inplace=True) # Remove rows with NaN values

# Define features and target
features = ['accounts_receivable', 'accounts_payable', 'payroll', 'revenue', 'month']
X = data[features]
y = data['cash_balance']
```



**Link in the
comments**



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4. Get your Forecast

Get the data into an Excel

```
# Export forecast to Excel
excel_output_path = '/content/cash_forecast_xgb.xlsx'
xgb_forecast_output.to_excel(excel_output_path, index=False)
```

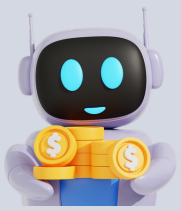
Get Visuals as images

```
# Save plot as PNG
png_output_path = 'cash_forecast_xgb.png'
plt.savefig(png_output_path)
```

Get PDFs or PPTs

```
# Save plot as PDF
pdf_output_path = 'cash_forecast_xgb.pdf'
plt.savefig(pdf_output_path, format='pdf')
plt.close()
```

```
# Create PowerPoint presentation
prs = Presentation()
slide_layout = prs.slide_layouts[5] # Title Only layout
slide = prs.slides.add_slide(slide_layout)
```



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5. Iterate and Improve Forecast!

These are some ways:

Add External Drivers

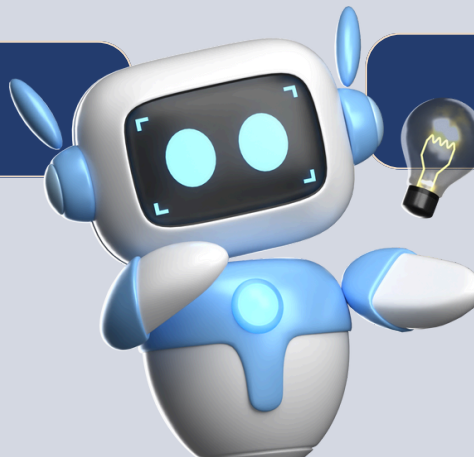
**Model Comparison and
Stacking**

Increase Data Frequency

Anomaly Detection

Feature Engineering

Continuous Retraining



BY CHRISTIAN MARTINEZ

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