NeuralProphet
A powerful AI framework for Time Series Models

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About Me!

• Self Taught Data Scientist/ Analytics Manager
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Agenda

• Introduction to Time Series
• What is Neural Prophet
• Why we need
• What’s the difference
• Hand’s on
• Roadmap
• References
Introduction to Time Series

• Sequential data-Order matters
• Observations are typically collected at regular intervals
• Advancements in machine learning have increased the value of time series data
• Organizations apply machine learning to time series data to make informed business decisions, do forecasting, compare seasonal or cyclic trend
• So, it is everywhere
What is Neural Prophet

1. **Python Library**
2. **Facebook Prophet & AR Net**
3. **Time Series Data**
4. **PyTorch**
5. **Neural Networks**
What's More

- You can easily get started
- Addresses pain points such as scale, customization and extensibility
- Decomposable with all time series components
- Upgraded version of prophet
Why we need NP?

- Aims to solve this see-saw of uncertainty
- AR-Net mimics the traditional AR process with a neural network
- Neural Prophet also upgrades Prophet’s linear external regressors to feedforward neural networks because deeper $\rightarrow$ better.
Why we need NP?

Stan → PyTorch

Extensible code.

Models suited for larger datasets.

Lagged input variables.
What's the difference?

Gradient descent for optimisation

Modeling using AR-Net

Separate FFNNs for lagged regressors

Configurable non-linear deep layers of the FFNNs

Custom losses and metrics
Roadmap

• Logistic growth for trend component
• Support for panel data by building global forecasting models
• Incorporate time series featurization for improved forecast accuracy
• Model bias modelling
• Unsupervised anomaly detection
References

• https://neuralprophet.com/model-overview/
• https://github.com/ourownstory/neural_prophet
• https://arxiv.org/abs/1911.12436
• https://bytepawn.com/comparing-neuralprophet-and-prophet-for-timeseries-forecasting.html
Thank you!

Time to take time seri…iously 😊