

NeuralProphet

A powerful AI framework for Time Series Models




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About Me!

- Self Taught Data Scientist/ Analytics Manager
- Community First Person
- Core member of HydPy, PyCon India, PyConf Hyd & Humans for AI
- Avid Speaker
- Lifelong Learner/Passionate Mentor

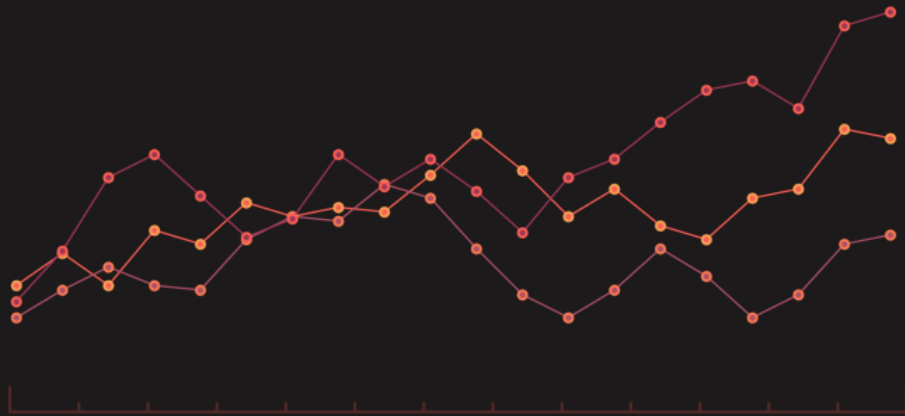


Agenda



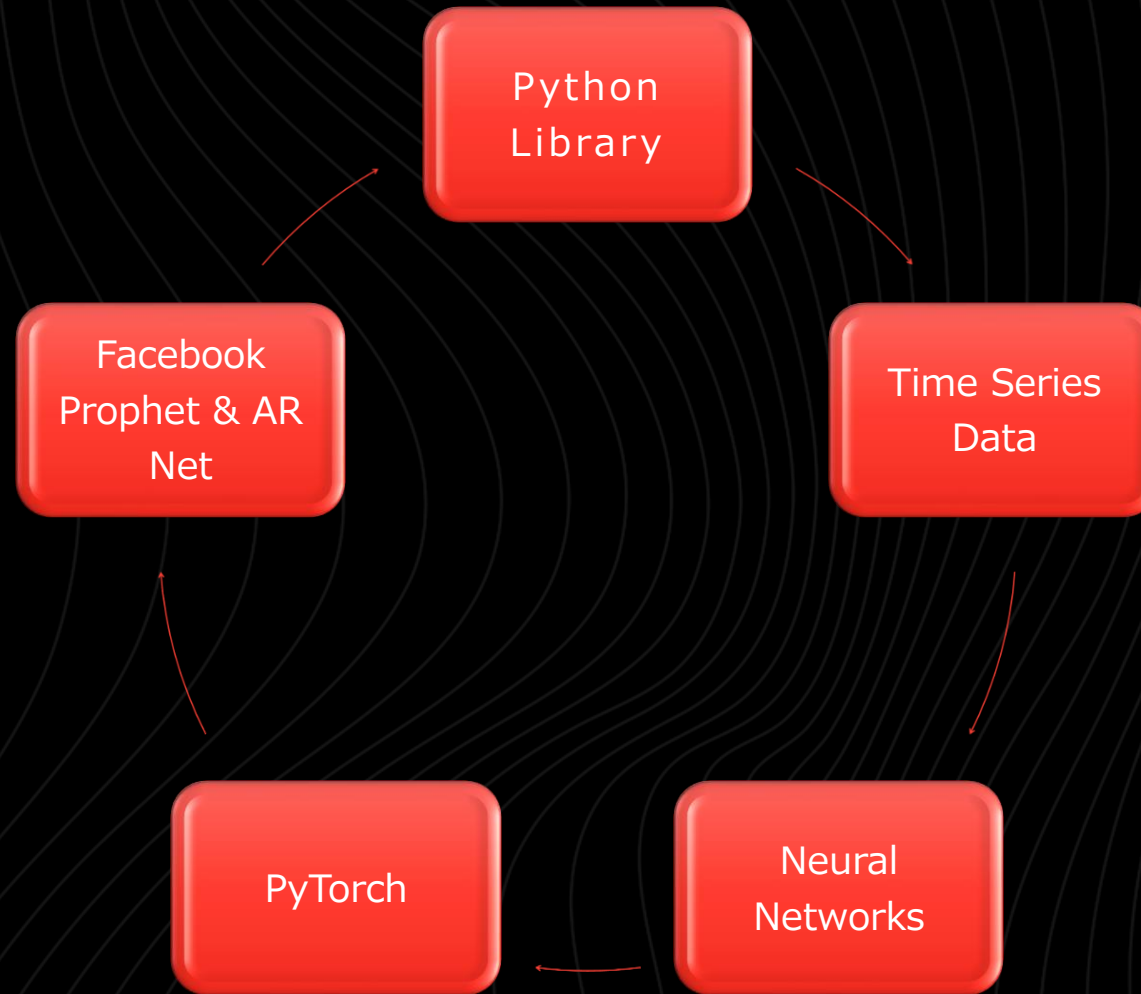
- Introduction to Time Series
- What is Neural Prophet
- Why we need
- What's the difference
- Hand's on
- Roadmap
- References

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





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

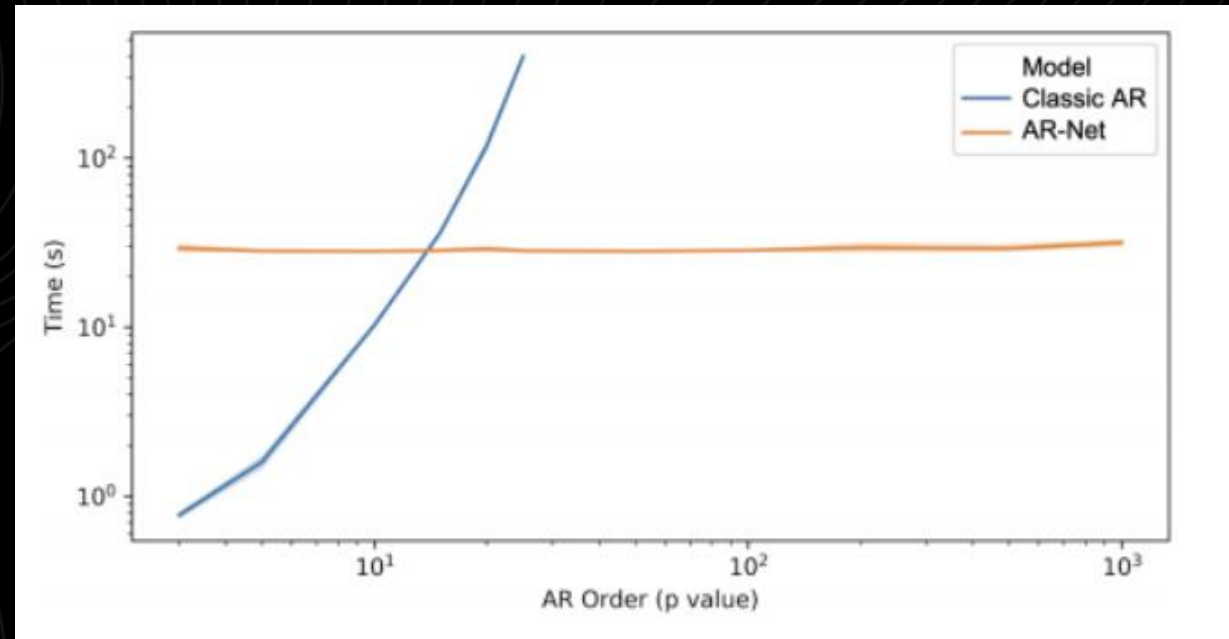
Why we need NP?

- 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.

AR Regressor

Neural
Networks

AR-NET



Why we need NP?



Extensible code.

Models suited for larger datasets.

Lagged input variables.

What's the difference?



Gradient descent
for optimisation

Modeling using
AR-Net

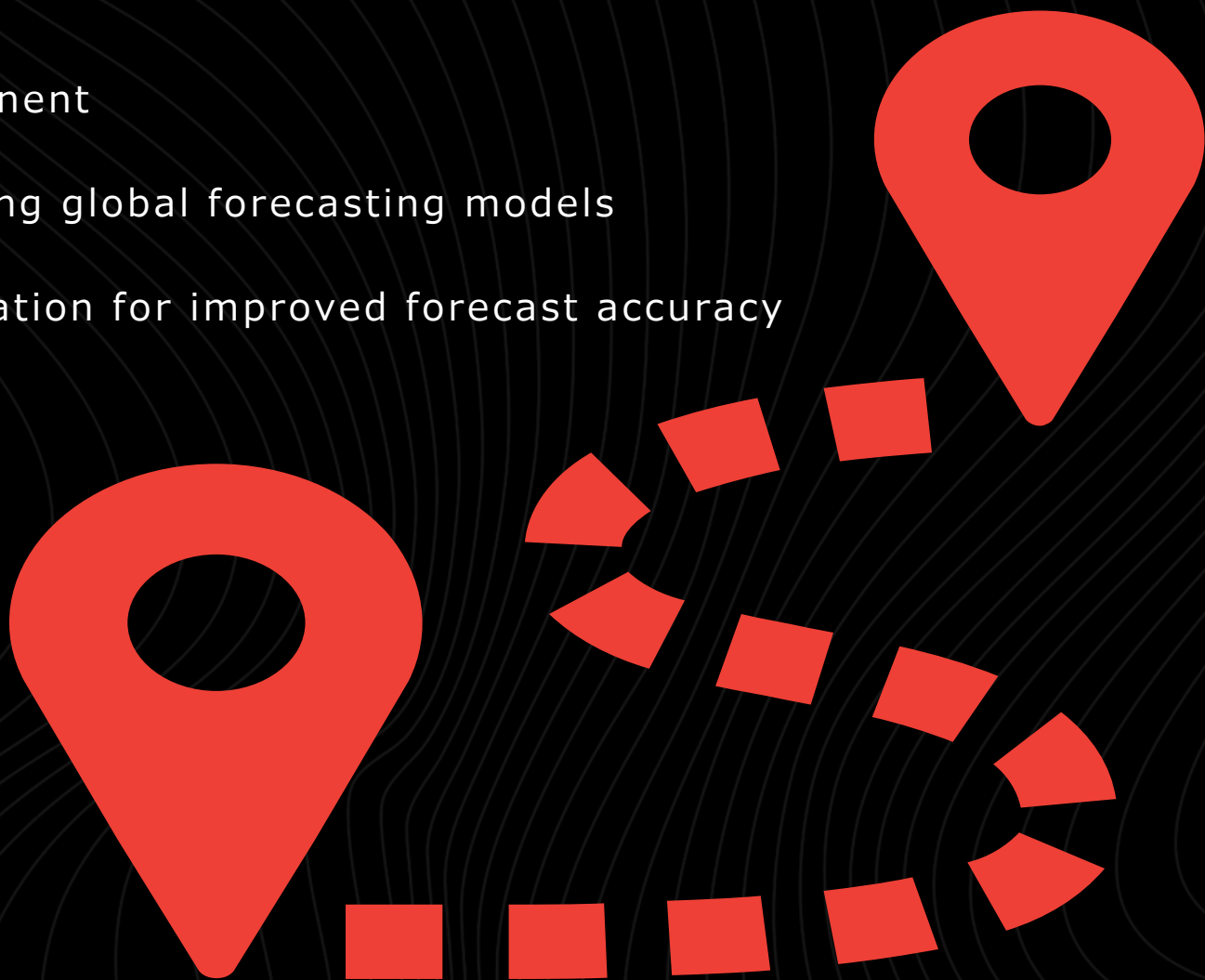
Separate FFNNs
for lagged
regressors

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 ser·iously ☺



itskpflow
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