

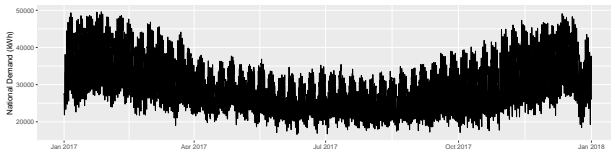
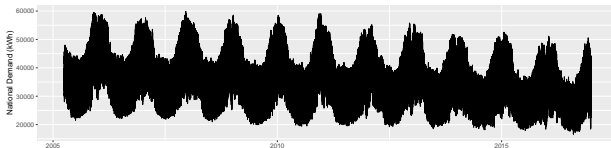
Machine Learning Applications in Energy Systems - A Python Framework

Nicole Ludwig

Institute for Automation and Applied Informatics (IAI) – Machine Learning for Time Series and Images Group (ML4TIME)

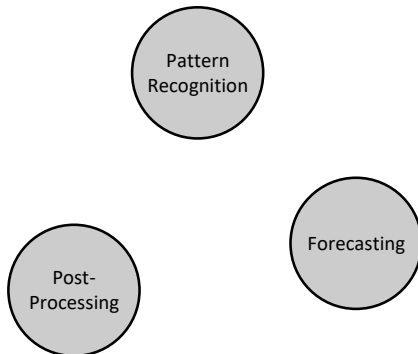


Energy Time Series

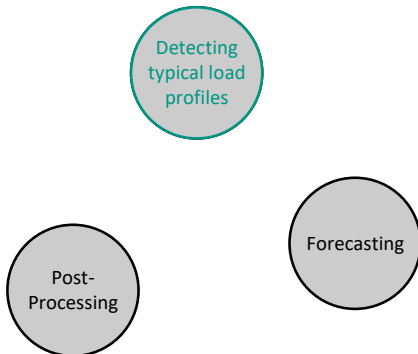


Titleimage source: <https://wallpaperaccess.com/europe-night>

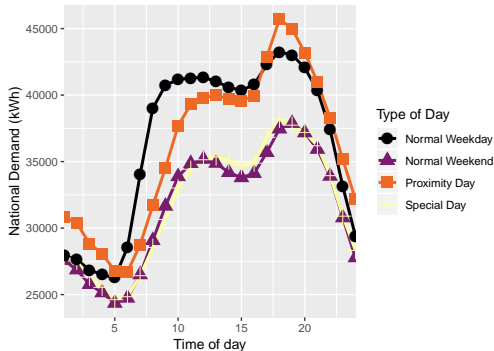
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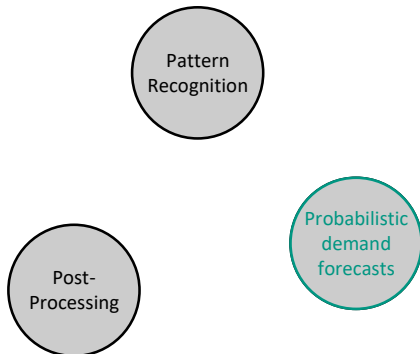
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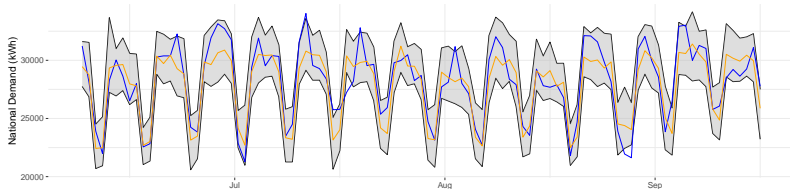
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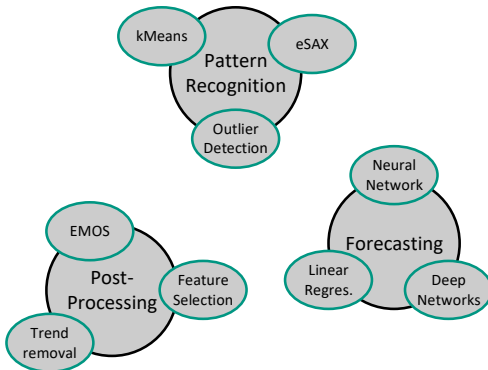
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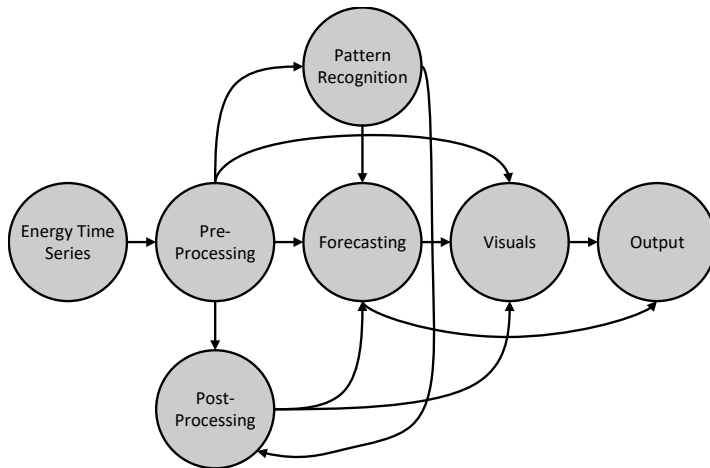


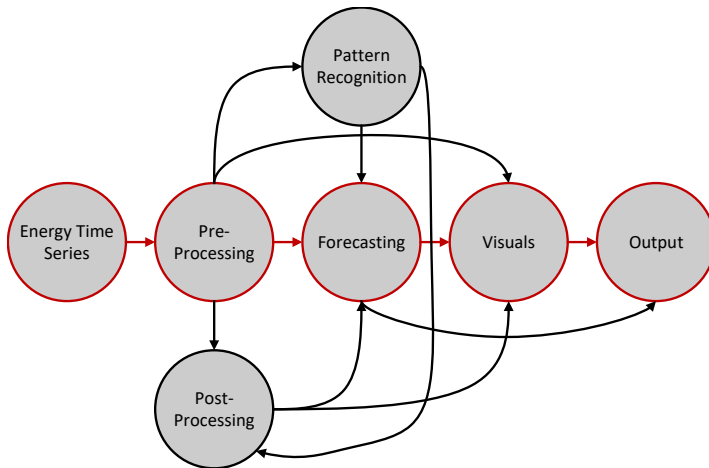
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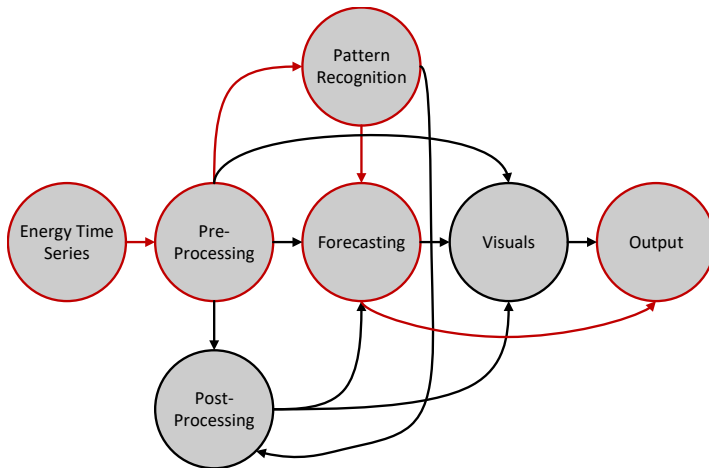


Machine Learning Applications in Energy Systems









```
pipeline = Pipeline()

pipeline.add(inputs=[scaler], module=lin_reg, target=white_list)

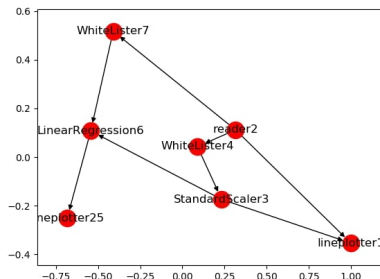
pipeline.add(inputs=[white_list_temp], module=scaler)

pipeline.add(inputs=[reader], module=white_list)
pipeline.add(inputs=[reader], module=white_list_temp)

pipeline.add(inputs=[lin_reg], module=plotter)

pipeline.add(module=reader)

pipeline.run()
figure = pipeline.draw()
plt.show()
pipeline.to_folder("./pipe1")
```



- Add modules to pipeline
- Internal data structure xarray
- Store pipeline in json file to access later
- Store modules and parameters in pickle
- Write your own modules

- Lots of possibilities for machine learning in energy systems
- We're working on a new Python framework to make energy time series analysis especially machine learning easily available and reproducible
- We're looking for a name for our Python framework!
- Any ideas what we should include? Want to collaborate?
→ nicole.ludwig@kit.edu