

Peak Detection using Transformers

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- Peak Detection
- Model Implementation
- Results
 - Result Analysis
 - Statistical Analysis
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- References

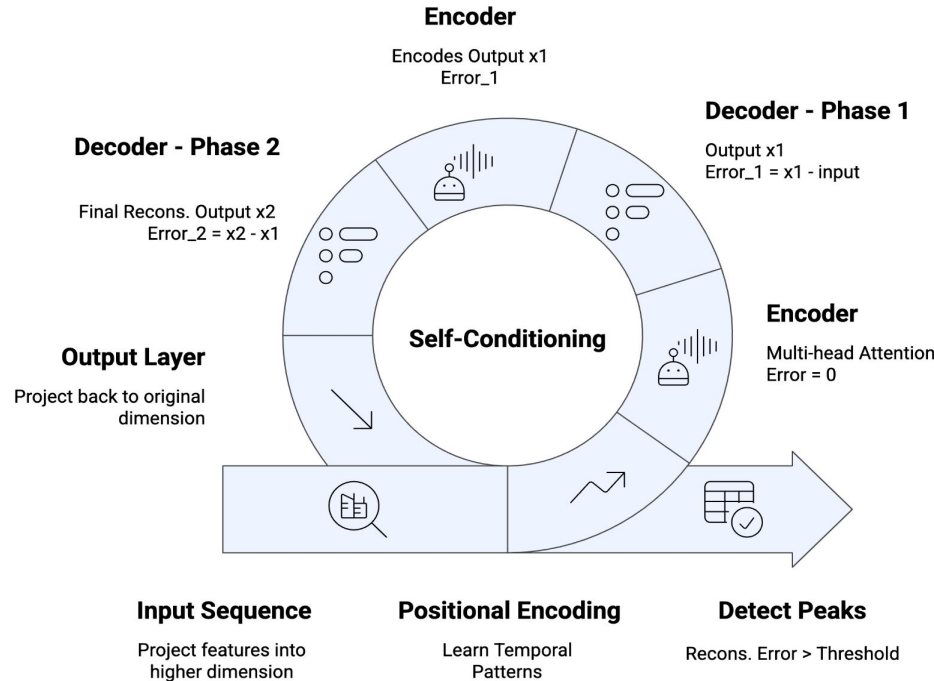
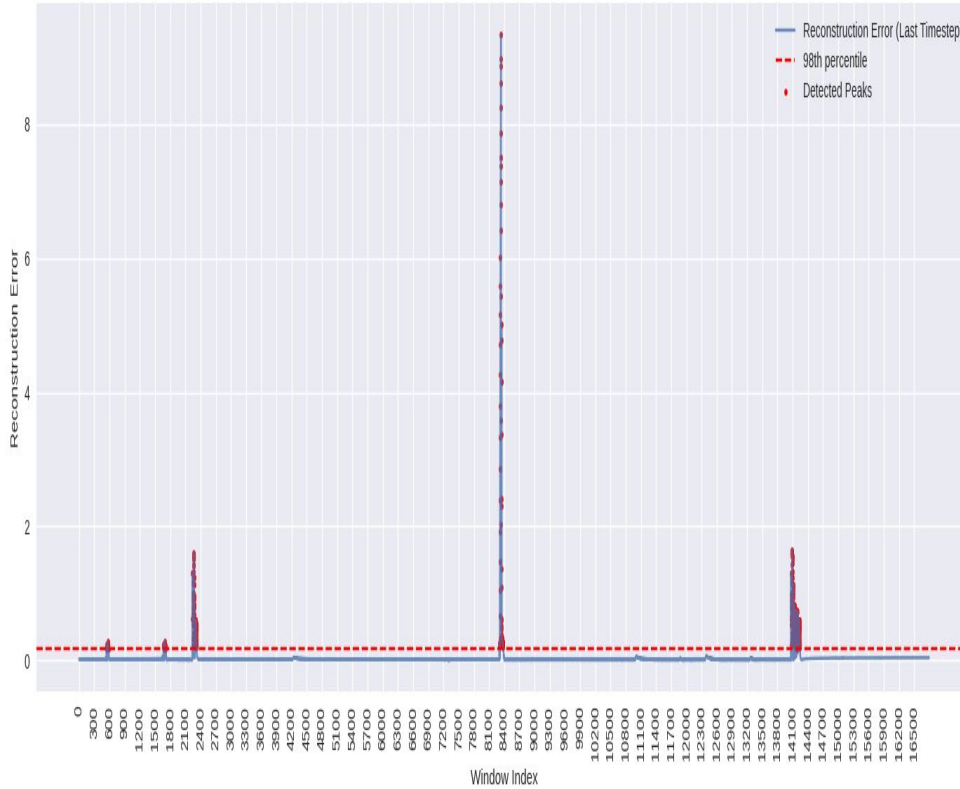


Fig : TranPD Model

- Peak = Identifying local maxima or minima
- 2017 Paper - **Attention Is All You Need!!!**
- Powers models like BERT, GPT, ViT etc.
- NLP, Computer Vision, Time-Series Forecasting

Tran-PD: Peak Detection via Reconstruction Error



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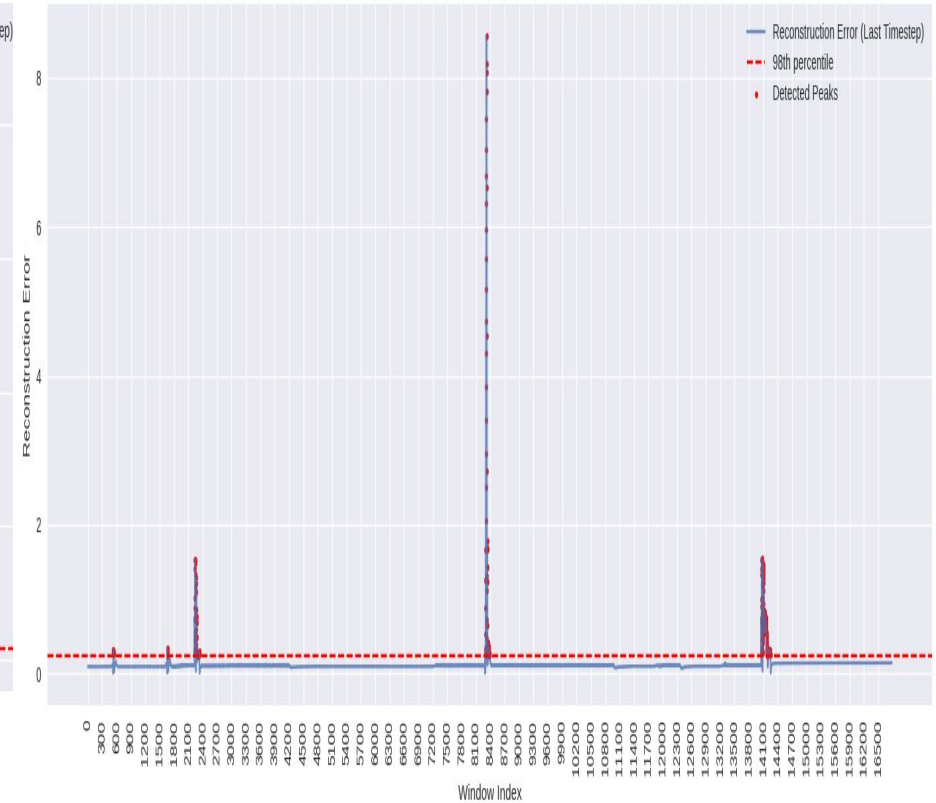


Fig : Reconstruction Error Plot - 336 Peaks Detected, Dim = 16, 32, W_size = 30, 60

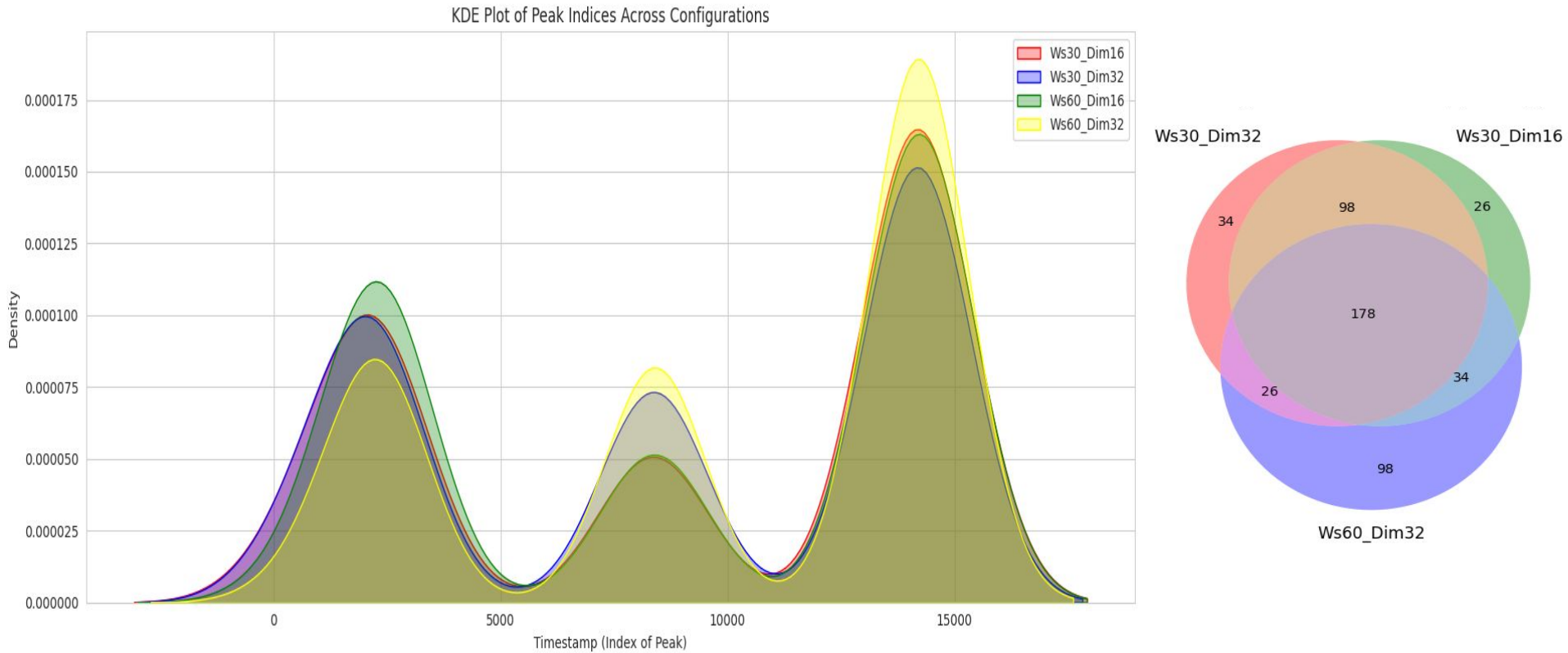


Fig : Peak Analysis Across Configurations

Measure	Peak	Non-Peak
Count	336	16447
Mean	0.74	0.11
Min	0.15	0.00
Max	8.55	0.15

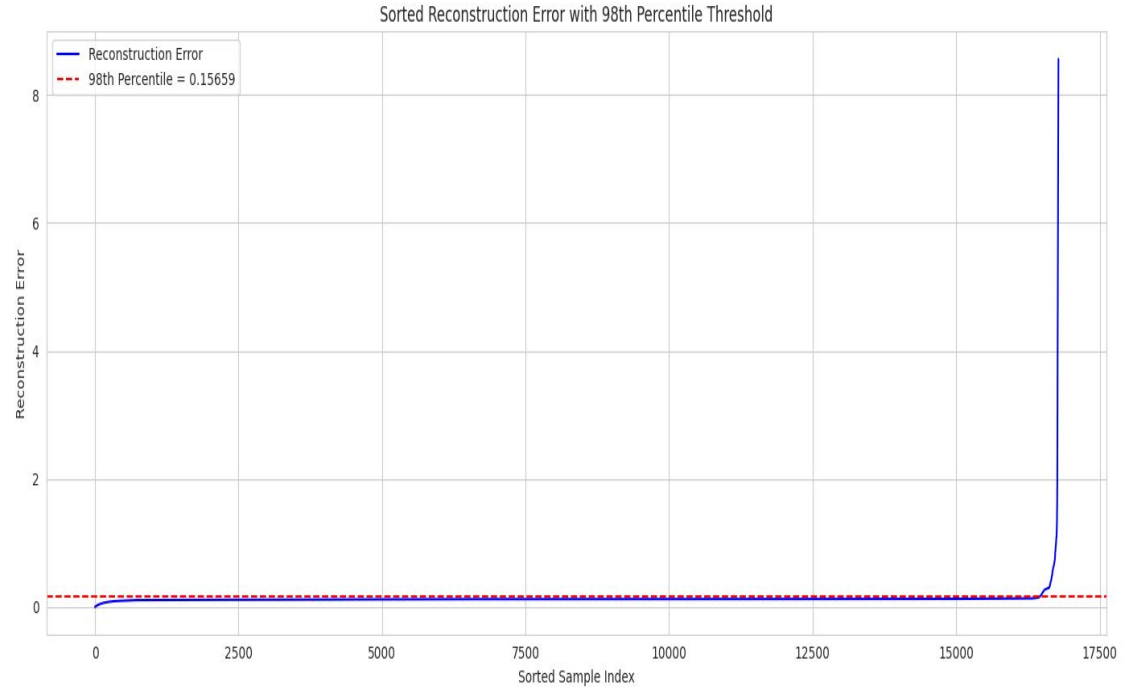


Fig : Statistical Analysis of Reconstruction Error

1. Implement Adaptive Thresholding Mechanism
2. Multivariate Peak Detection
3. Peak Forecasting

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3. <https://github.com/imperial-qore/TranAD>
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Thank You For Your Attention!