

# Explainable model for time-series via ChatGPT

Xue Zhechang

CHAIR FOR PERVASIVE COMPUTING SYSTEMS, INSTITUTE OF TELEMATICS, DEPARTMENT OF COMPUTER SCIENCE



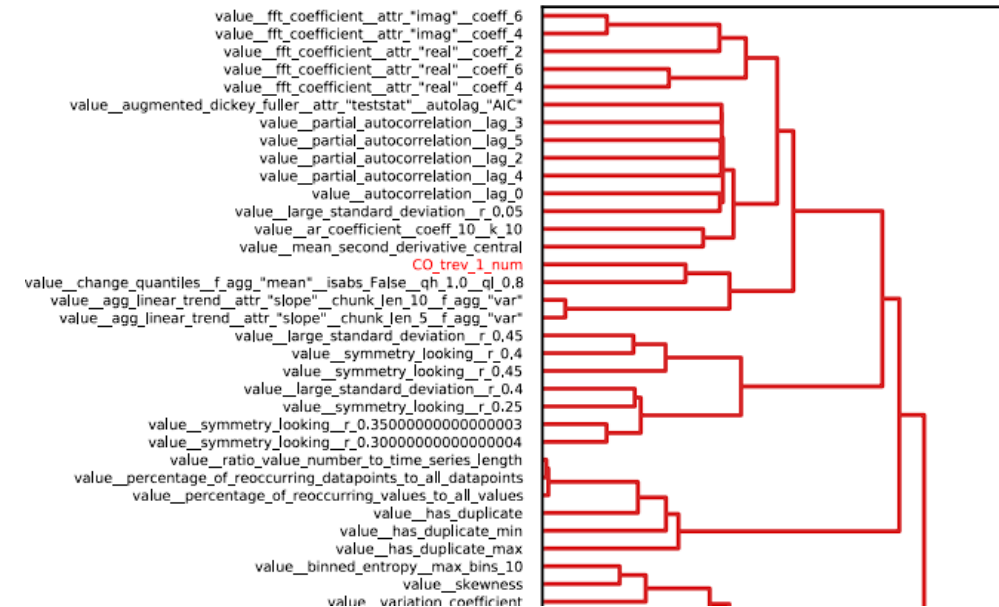
# Outlines

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- Motivation
- Reason of using ChatGPT
- A preliminary experiment
- Methodology
- Evaluation

# Motivation

- Problem: Current methods to explain time series are **not user-friendly** for **non-researchers**.
- Idea: Use **ChatGPT** to explain why the feature can contribute to the classification
- Benefit:
  - User-friendly and easy-accessible.
  - Link features to knowledge in other fields.



# Reason of using ChatGPT

## Related Works

### ■ Forecasting via Prompt

- Prompt-based method > numerical-based in forecasting time-series data
- Big advantage in zero-shot (RMSE: 70 vs 7)

### ■ Casual inference

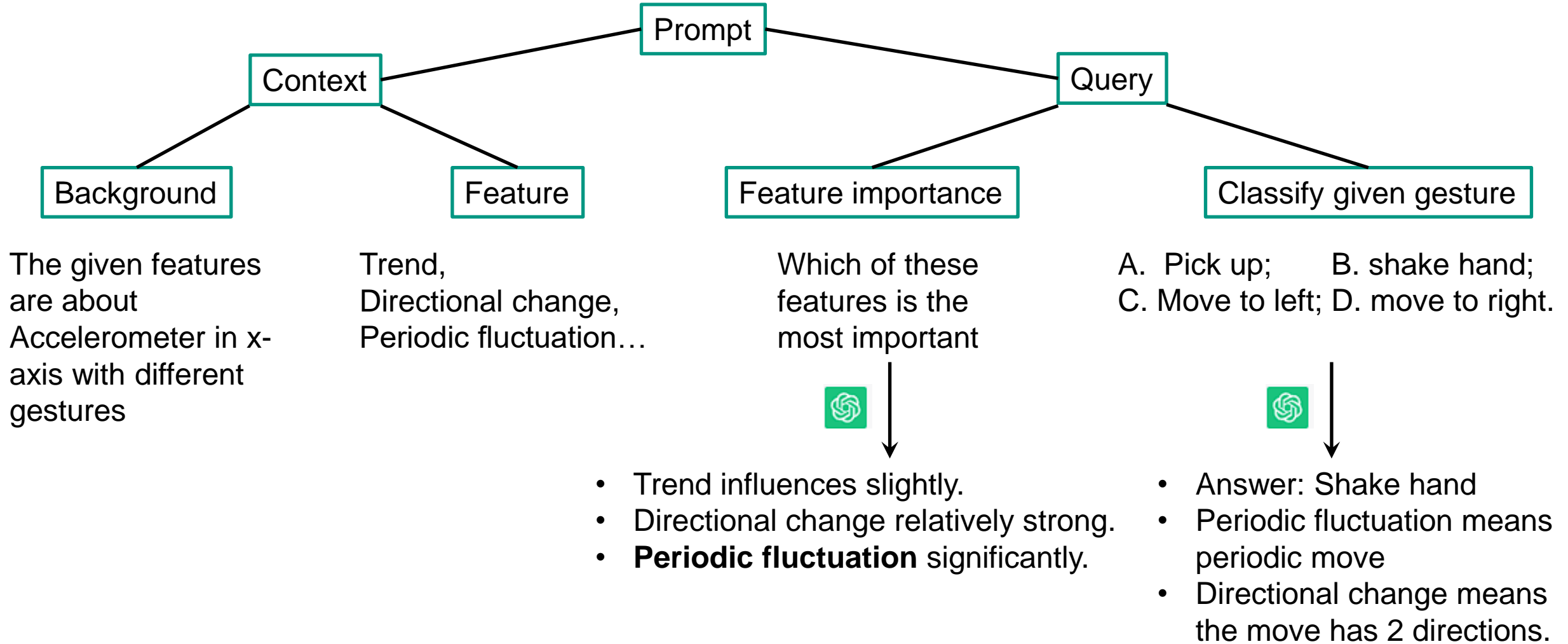
- GPT can generate causal graphs in a high accuracy (about 70%)
- Helpful in combining domain knowlegde to classification.



PROMPTCAST: A NEW PROMPT-BASED LEARNING PARADIGM FOR TIME SERIES FORECASTING, Hao Xue, Flora D. Salim, <https://arxiv.org/abs/2210.08964>  
Can Large Language Models Build Causal Graphs?, Stephanie Long, Tibor Schuster, Alexandre Piché, <https://arxiv.org/abs/2303.05279>

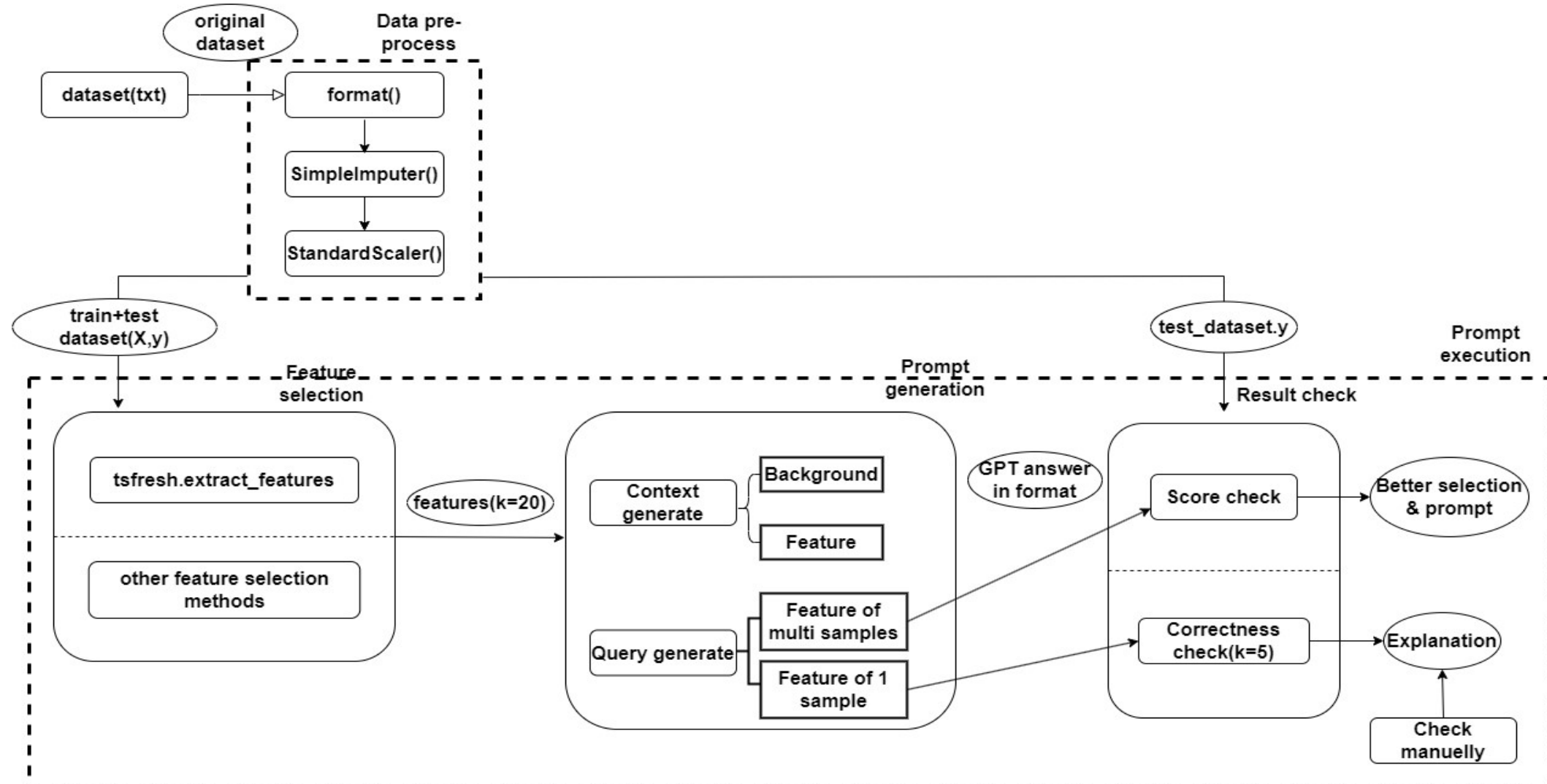
# A preliminary experiment

Accelerometer in x-axis with different gestures



# Methodology

## General pipeline





# Evaluation

- Research object: Time-series datasets about human activity recognition
  - basic movement (pick up, shake...)
  - Intuitively understandable explanation
  
- Target:
  - Stable desired answer
    - Better prompt, avoiding incorrect answer or unwished format
  
  - Prove to be reliable
    - Correct casual inference
    - Good consistency
    - Modify original data to strongly affect result