



# CARE-PD

## A Multi-Site Anonymized Clinical Dataset for Parkinson's Disease Gait Assessment

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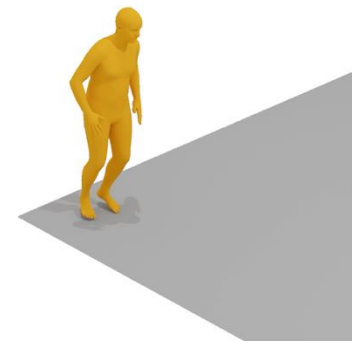
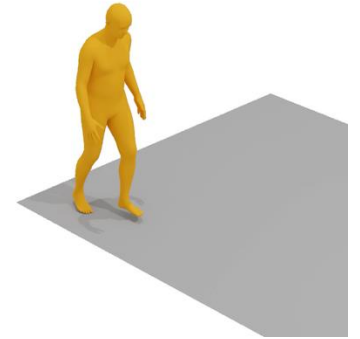
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### NeurIPS 2025 Datasets and Benchmarks



# What is CARE-PD?

- A large dataset of clinical human gait containing:
  - **9 cohorts, 8 clinical sites, 6 countries**
  - **19 hours of data**
  - **8,477 walking segments**
  - **362 participants**
- Clinical labels:
  - UPDRS-gait scores, medication, freezing of gait (FOG)



# Current Benchmarks for CARE-PD

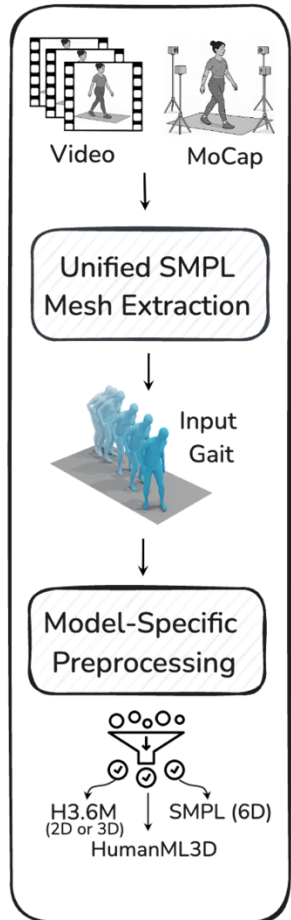
## Task A – Clinical Score Estimation

- Motion models
- Gait features

## Task B – Motion Pretext Learning

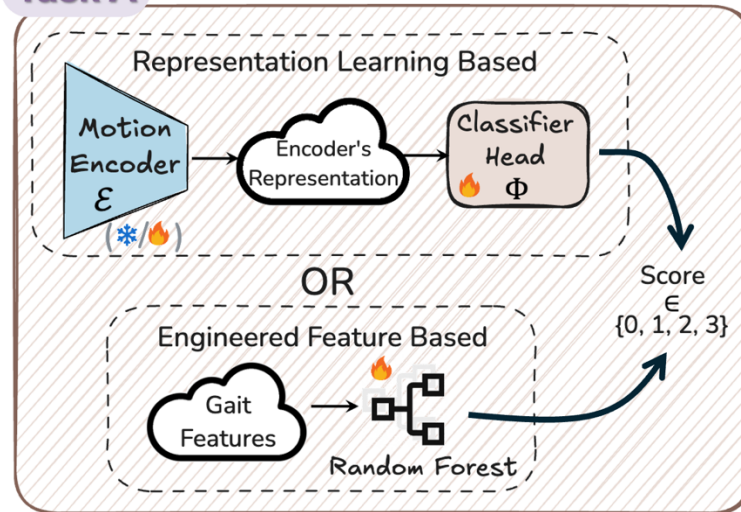
- 2D-to-3D motion lifting
- 3D motion reconstruction

### Data Preprocessing



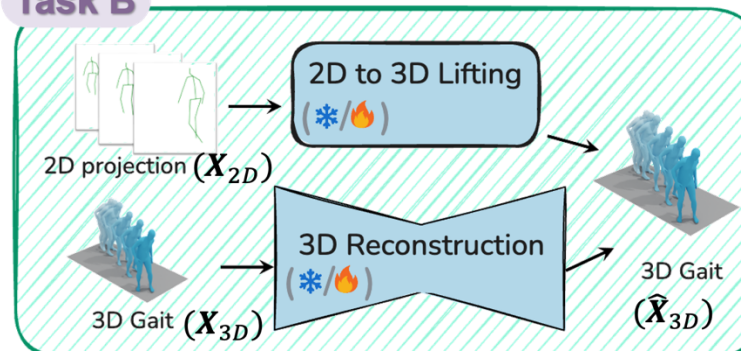
### Task A

#### Downstream Classifier M

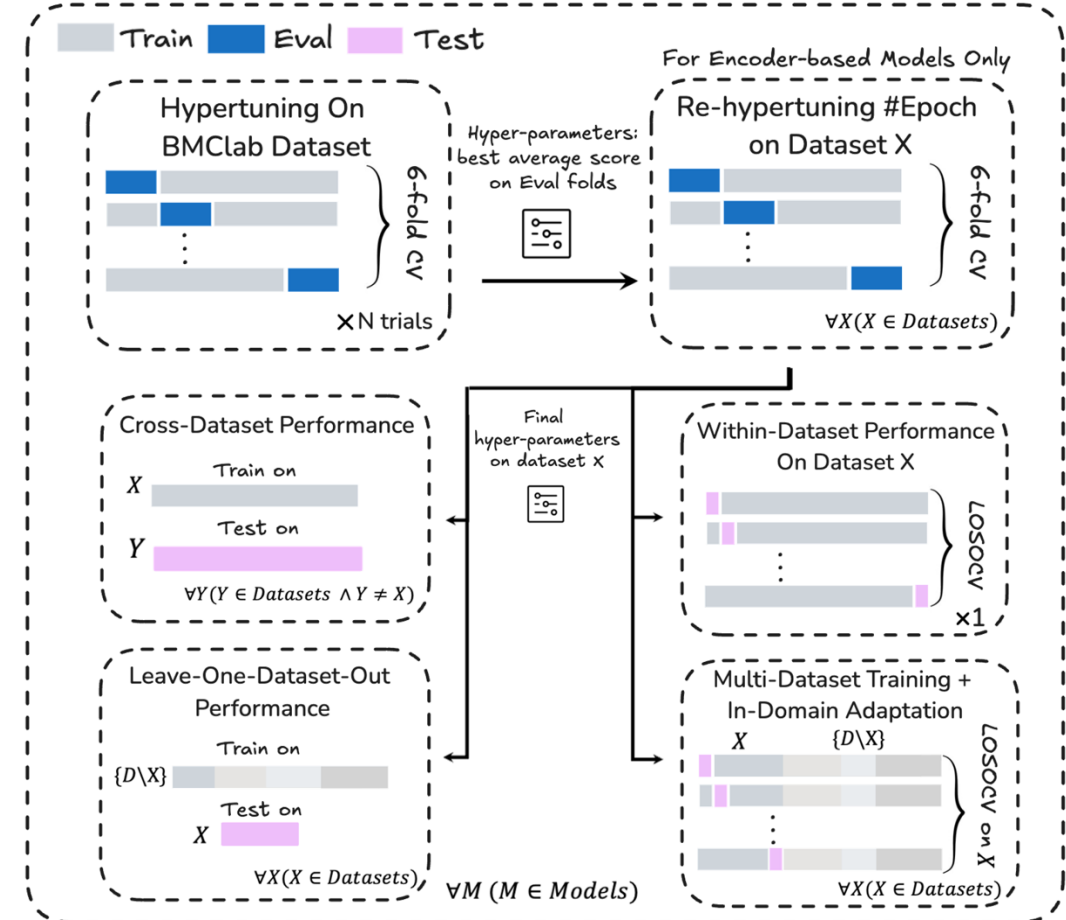


### Task B

#### Pretext Task



### Experiment Design

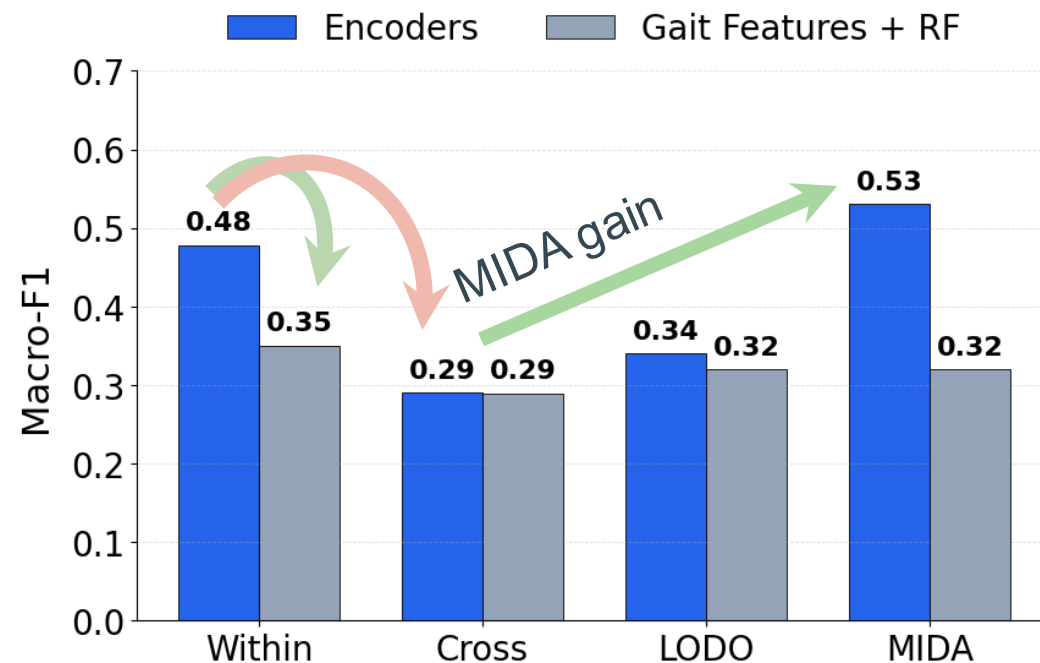


# Key Findings

## Cross-site generalization is hard; multi-site training helps.

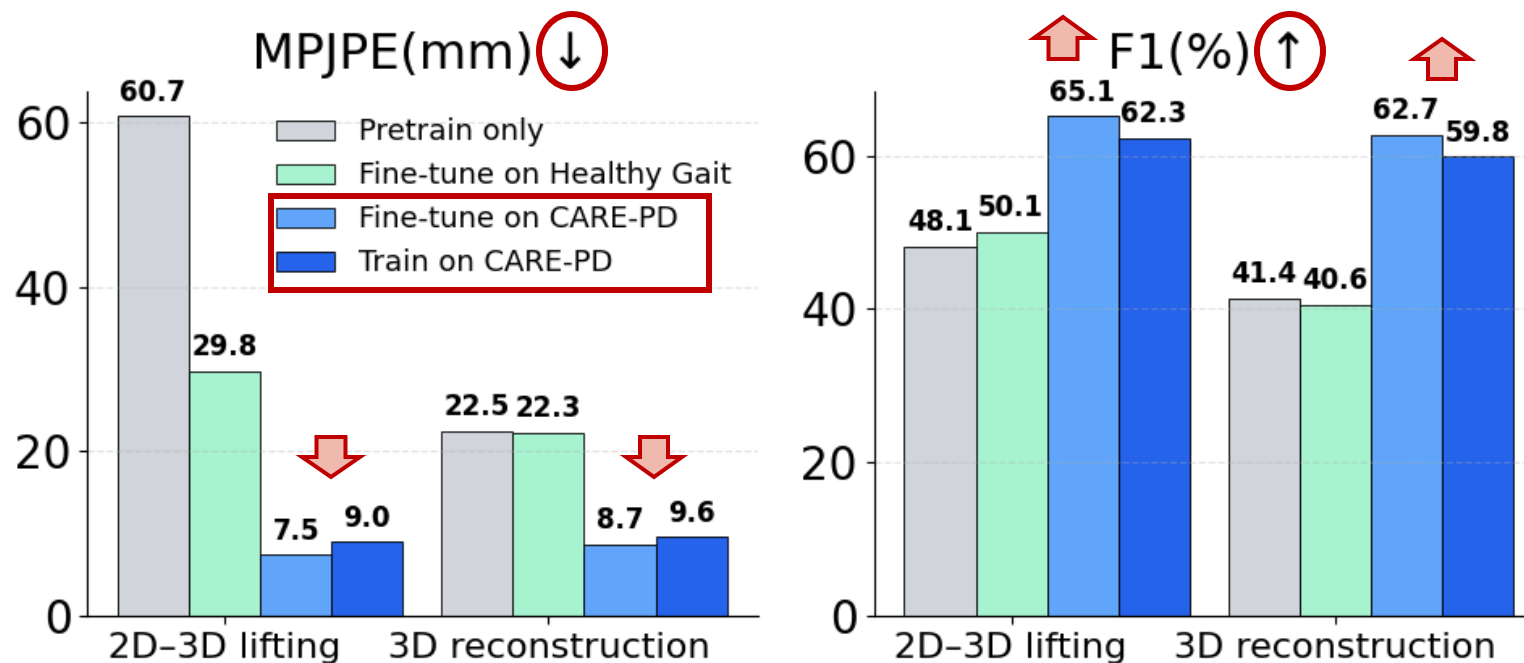
Motion encoders outperform features; but collapse under cross-site shift.

Multi-site adaptation (MIDA) restores performance for encoders, while feature baselines barely change.



# Key Findings

 CARE-PD fine-tuning/training improves both the pretext and the downstream clinical task

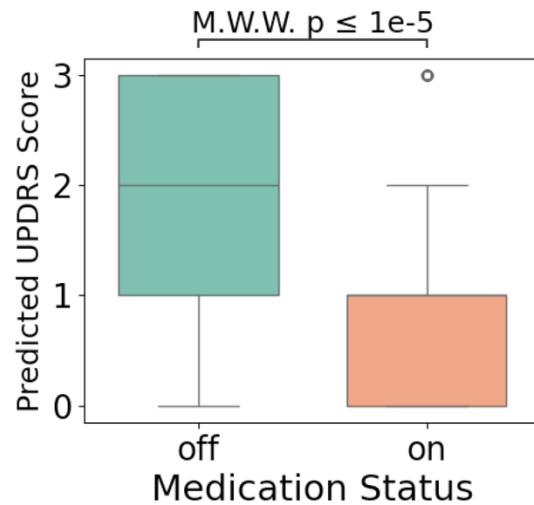


*Each bar shows model performance after training or fine-tuning on the specified dataset.*

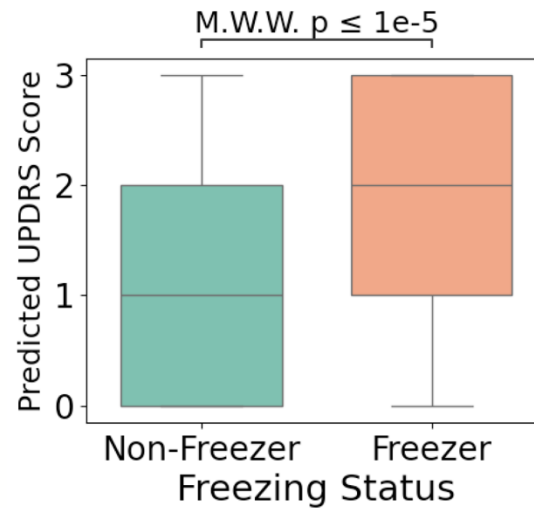
# Key Findings

 Predicted scores preserve subgroup sensitivity across:

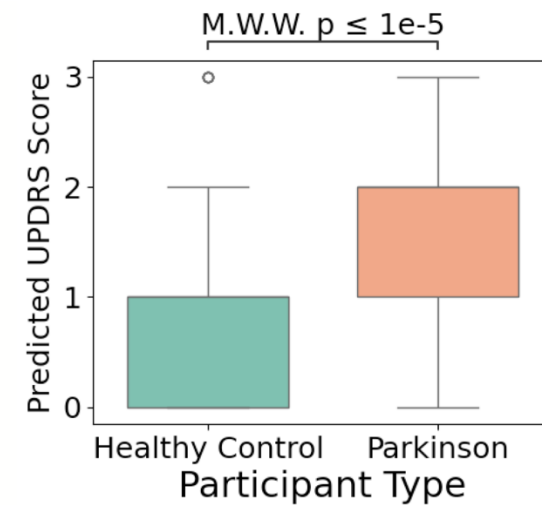
## Medication



## FoG status



## Diagnosis Type



# Conclusions and Future Work

- 💡 Motion models fail under distribution shifts
- 💡 Data quality and quantity are as vital as the model architecture
- 💡 Domain-aware training and test-time adaptation techniques are required to capture pathology without learning site bias.
- 💡 CARE-PD has broader potentials!



## Join CARE-PD

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**CARE-PD**  
**A Multi-Site Anonymized Clinical Dataset for**  
**Parkinson's Disease Gait Assessment**

**Thank You!**

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