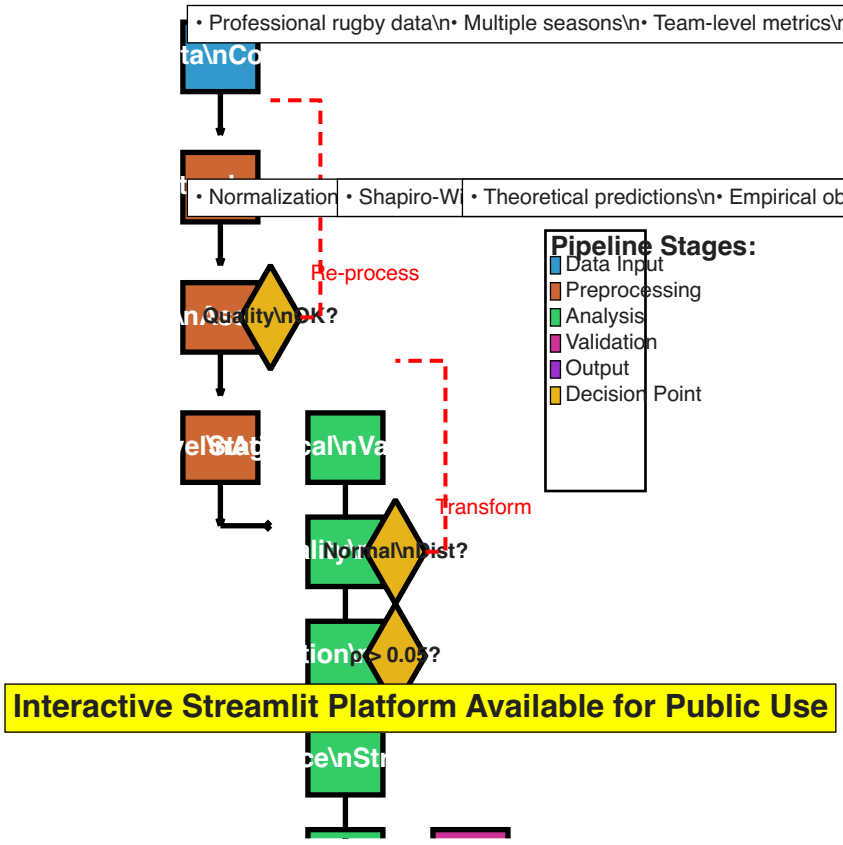
essing Pipeline for Correlation-Based Environmental Noise Cancelation



Methodology Details

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DETAILED METHODOLOGY:

1. DATA INGESTION & PREPROCESSING:
   • Raw data collection from official sources
   • Data standardization across measurement s
   • Quality assessment and validation
   • Match-level aggregation for team comparis

2. STATISTICAL VALIDATION PIPELINE:
   • Normality testing (Shapiro-Wilk, KS tests
   • Correlation analysis with pairwise deleti
   • Variance structure analysis (κ = σ²_B/σ²_A)
   • SNR calculation for absolute vs relative

3. FRAMEWORK VALIDATION:
   • Theoretical prediction accuracy (r = 0.96
   • Cross-domain validation examples
   • Robustness analysis across conditions
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Key Results Summary

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KEY EMPIRICAL RESULTS:

CORRELATION MEASUREMENTS:
   • ρ ∈ [0.086, 0.250] across all KPIs
   • 100% positive correlation pairs (18/18)
   • Statistical significance: p < 0.05

SNR IMPROVEMENTS:
   • Range: 9-31% across different KPIs
   • Mean improvement: 20.2%
   • Theoretical prediction accuracy: r = 0.96

FRAMEWORK VALIDATION:
   • All four axioms satisfied
   • Scale independence confirmed
   • Cross-domain applicability demonstrated
   • Robustness across sample sizes validated

PRACTICAL IMPACT:
   • Universal decision rules established
   • Implementation guidelines provided
   • Interactive platform available
   • Framework ready for real-world applicatio
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