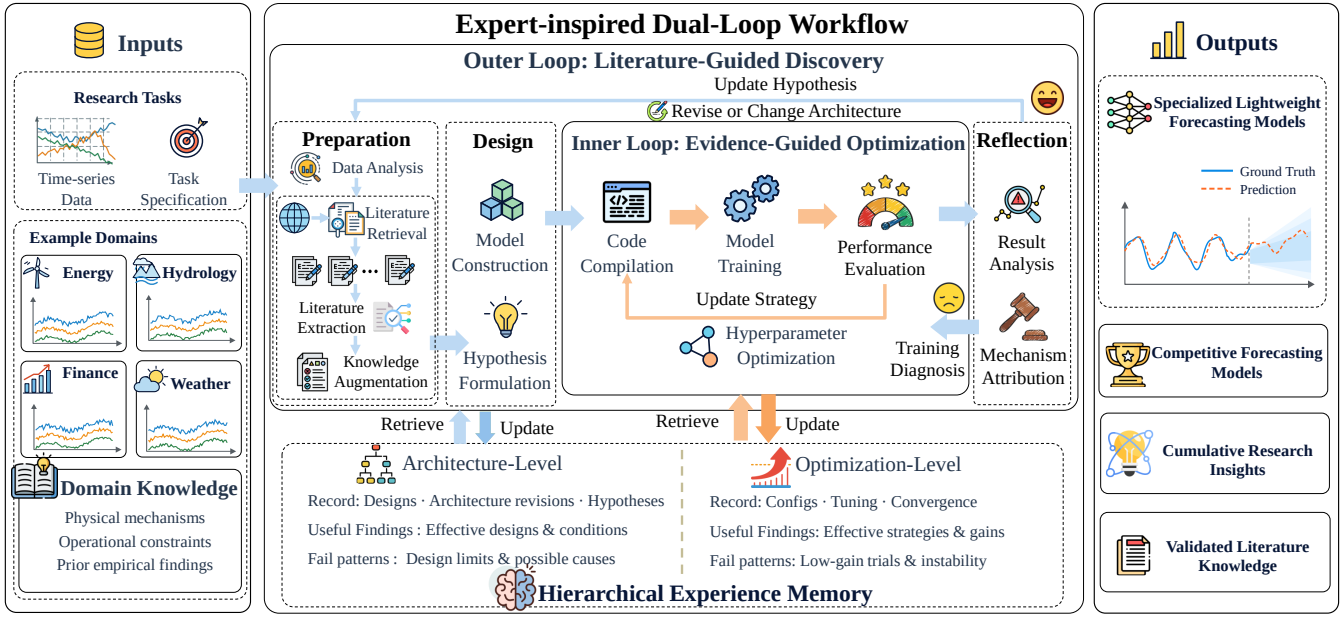

Inputs
Research Tasks
Time-series Data
Task Specification
Example Domains
Energy
Hydrology
Finance
Weather
Domain Knowledge
Physical mechanisms
Operational constraints
Prior empirical findings
Expert-inspired Dual-Loop Workflow
Outer Loop: Literature-Guided Discovery
Update Hypothesis
Revise or Change Architecture
Preparation
Data Analysis
Literature Retrieval
Literature Extraction
Knowledge Augmentation
Design
Model Construction
Hypothesis Formulation
Inner Loop: Evidence-Guided Optimization
Code Compilation
Model Training
Performance Evaluation
Update Strategy
Hyperparameter Optimization
Reflection
Result Analysis
Training Diagnosis
Mechanism Attribution
Retrieve
Update
Retrieve
Update
Architecture-Level
Record: Designs · Architecture revisions · Hypotheses
Useful Findings : Effective designs & conditions
Fail patterns : Design limits & possible causes
Optimization-Level
Record: Configs · Tuning · Convergence
Useful Findings: Effective strategies & gains
Fail patterns: Low-gain trials & instability
Hierarchical Experience Memory
Outputs
Specialized Lightweight Forecasting Models
Ground Truth
Prediction
Competitive Forecasting Models
Cumulative Research Insights
Validated Literature Knowledge