



Control-Flow
Graph Generation

Call Graph
Generation

Heterogeneous
Representation

Heterogeneous
Graphs Fusion

Heterogeneous
Contract Graphs

Heterogeneous Contract
Graph Generator

Meta Relations
Extractor

Node Features
Extractor

MANDO-HGT Graph
Neural Network

Phase 1:
Coarse-Grained
Detection

Phase 2:
Fine-Grained
Detection

Two-Phase Vulnerability Detector