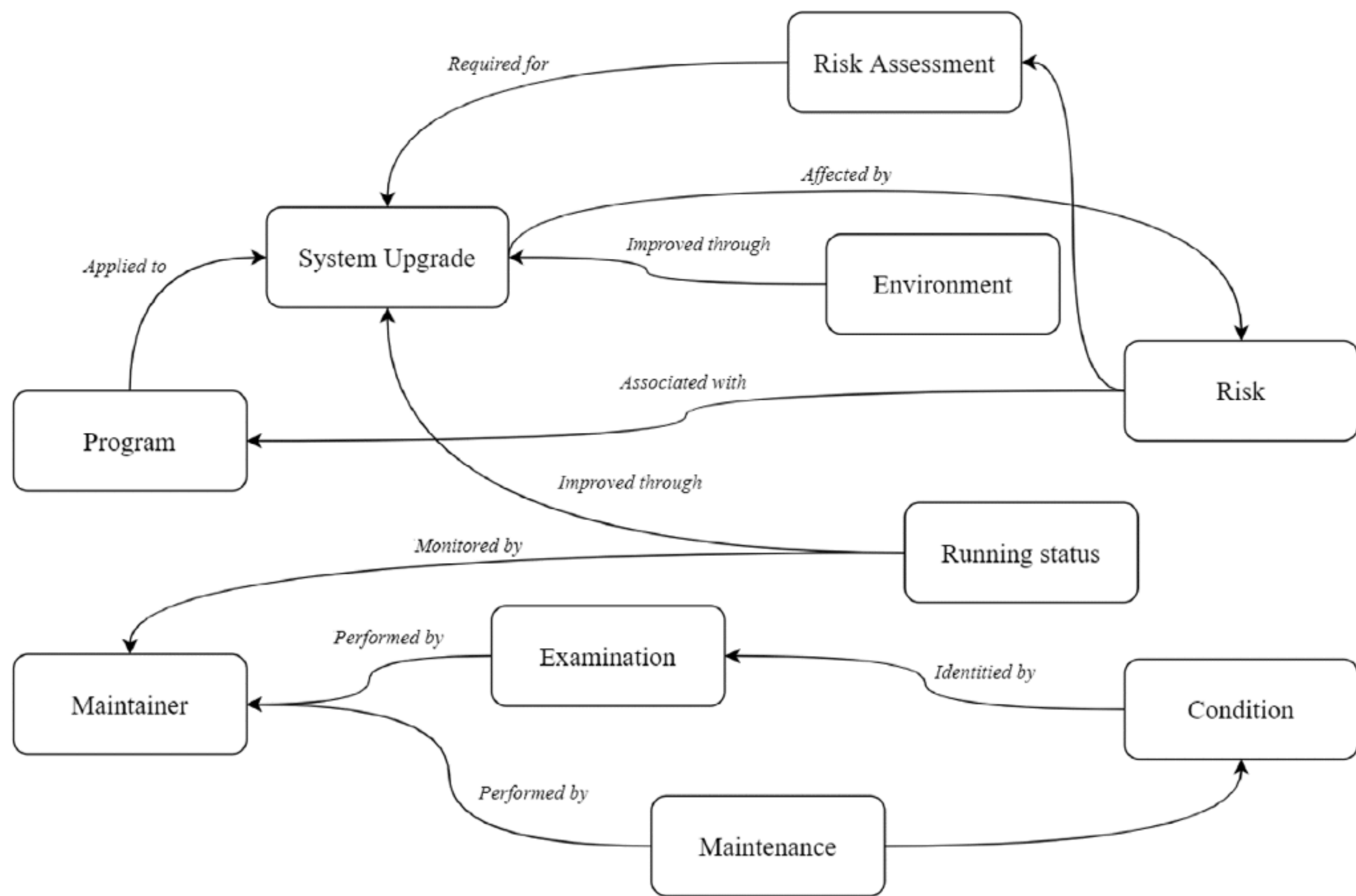


Introduction

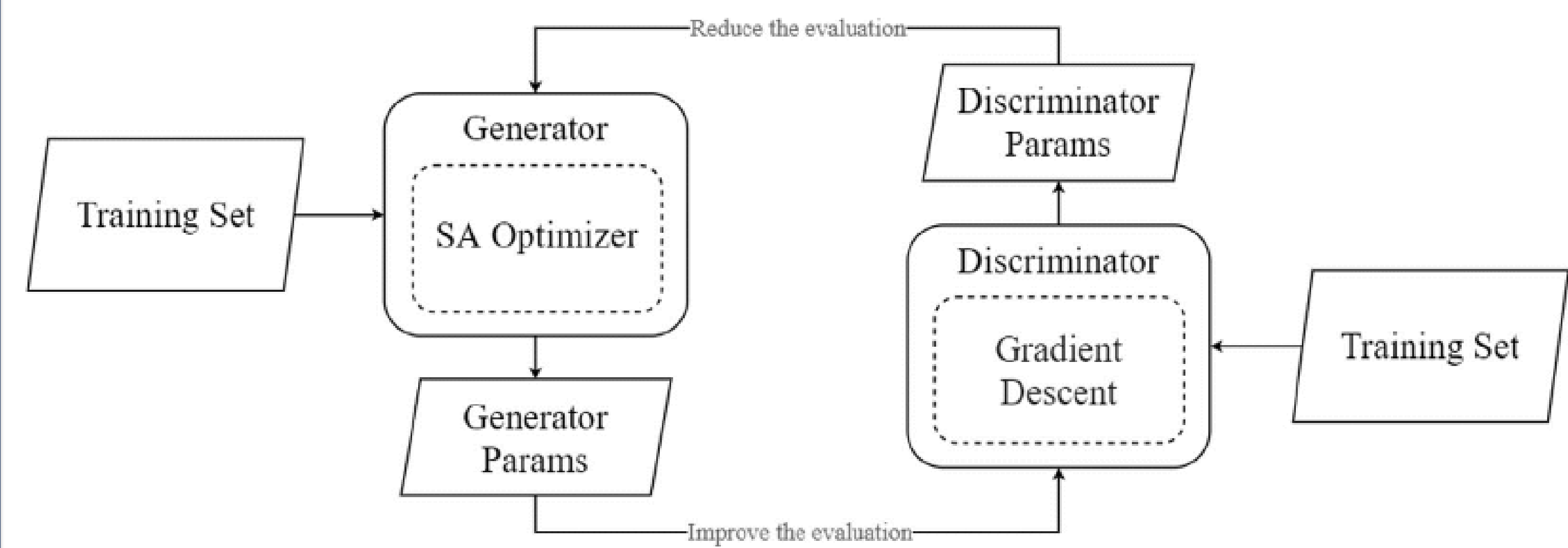
- **Semantic heterogeneity** in knowledge-defined networks arises from differences in knowledge representation, impacting collaboration among edge nodes
- **Ontology matching** addresses this issue by determining weights and confidence levels for multiple similarity assessment methodologies
- **Ontology matching** operations can be further enhanced through approaches such as **Generative Adversarial Networks**
- An improved **SA-GNN approach** is proposed to address the **ontology alignment problem**

Problem Statement

- The use of genetic algorithms (GA) to solve the meta-matching problem in ontology has two main limitations: **slow convergence** and **premature convergence**
- These problems can reduce the algorithm’s effectiveness and efficiency in finding optimal solutions.



Simulated Annulling based Generative Adversarial Network



OAEI/s Benchmark Description

Case ID	Introduction
101-104	Ontologies which are consistent
201-208	Not having similar linguistics and lexical features
221-247	With different structure features
248-266	Not having similar structure, and other features
301-304	Real World Ontologies

Evaluation Results

Cases ID	Edna	TaxoMap	AROMA	Falcon	GeRMeSMB	MapPSO	CODI	Our proposal
101–104	1.000	0.507	0.988	1.000	1.000	1.000	0.997	1.000
201–208	0.546	0.435	0.735	0.843	0.884	0.692	0.456	0.799
221–247	0.884	0.693	0.958	0.997	0.976	0.984	0.983	0.992
248–266	0.350	0.387	0.372	0.509	0.602	0.480	0.373	0.559
301–304	0.462	0.428	0.629	0.799	0.470	0.349	0.590	0.789

Conclusion

- Proposed approach compared with other state-of-the-art approaches for ontology alignment
- The Proposed SA-GAT optimizes a single-objective model by iterative tuning of parameters and achieving improved matching outcomes
- In future, we intend to optimize the proposed approach for fully taking the structure of the ontology into consideration

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