The Need to Support of Data Flow Graph Visualization of Forensic Lucid Programs, Forensic Evidence, and their Evaluation by GIPSY

Serguei A. Mokhov, Joey Paquet, Mourad Debbabi

1. Introduction

As part of the International Computer Forensics Conference, a new research project has been proposed, called Forensic Lucid. The language is under active design and development involving its various aspects, the corresponding complex, run-time, and intensive "development" environments. In this paper, we propose a theory of its continuous monitoring, a monitor-assisted system.

1.1. Intentional Logic and Programming

1.1.1. An Example of Using Temporal Intentional Logic.

Temporal intentionist logic is an extension of temporal logic that allows to express: (i) If at some future time p in the past, q is existing there today.

Context (i.e., event in time today).

2. Forensic Lucid

The goal is to define a Forensic Lucid language where its constructs correctly express forensic evidence, which can be a start of a case and what we have already observed as a final state. The implementation system (i.e., GIPSY) is to be a testament to the objectives made possible by the result of expression in the form of either fore or true, which is true.

The context contains multiple backtracks, that correspond to the explanation of the evidence (or lack thereof).

2.1. Properties

1. Decomposed evidence, possible initial observed event.

Listing 1: Intensional Storyboard Expression

2. Operational Semantics

The collection of the translated operators denotes in an operational form, while their equivalence to the original Lucid programs.

The operational semantics are blockings to construct more complex case-specific functions that represent a particular investigative case as well as more complex situations.

2.2. Operational Semantics

2.2.1. Higher Order Context

The operational context are statements, i.e., as are equivalent statements in the arc model, where statement is the basic evidence presentation, which is a context model. The operational context are used to model, or to express, the context model, which is used to express, or to model, the context model.

In Forensic Lucid, the operational context are used to model, or to express, the context model. The operational context are used to model, or to express, the context model.

2.3. Forensic Operators

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3. Conclusion

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3.1. Future Work

The near-future work will consist primarily of the following steps:

- Demonstrate the utility of all the mentioned Lucid dialects and their formalization with backtracks.
- Augment the language specification to include the OOP/ETL theory [79, 80] of evidence to allow for weights for claims, credibility, belief, and plausibility parameters.
- Propose semantic roles involving intensional data-warehouse.
- Implementation of the Forensic Lucid compiler, run-time and interactive development environments.

3.2. Developments to Enhance Forensic Lucid with Credibility and Visualization

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Keywords: Data flow graph, visualization, forensic evidence, evaluation, GIPSY

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Forensic Lucid is a novel forensic language for the lucid programs as 2D and 3D EXITs, that need extensive "bubbles".

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