

Visual Analytics for Cloud Ecosystems

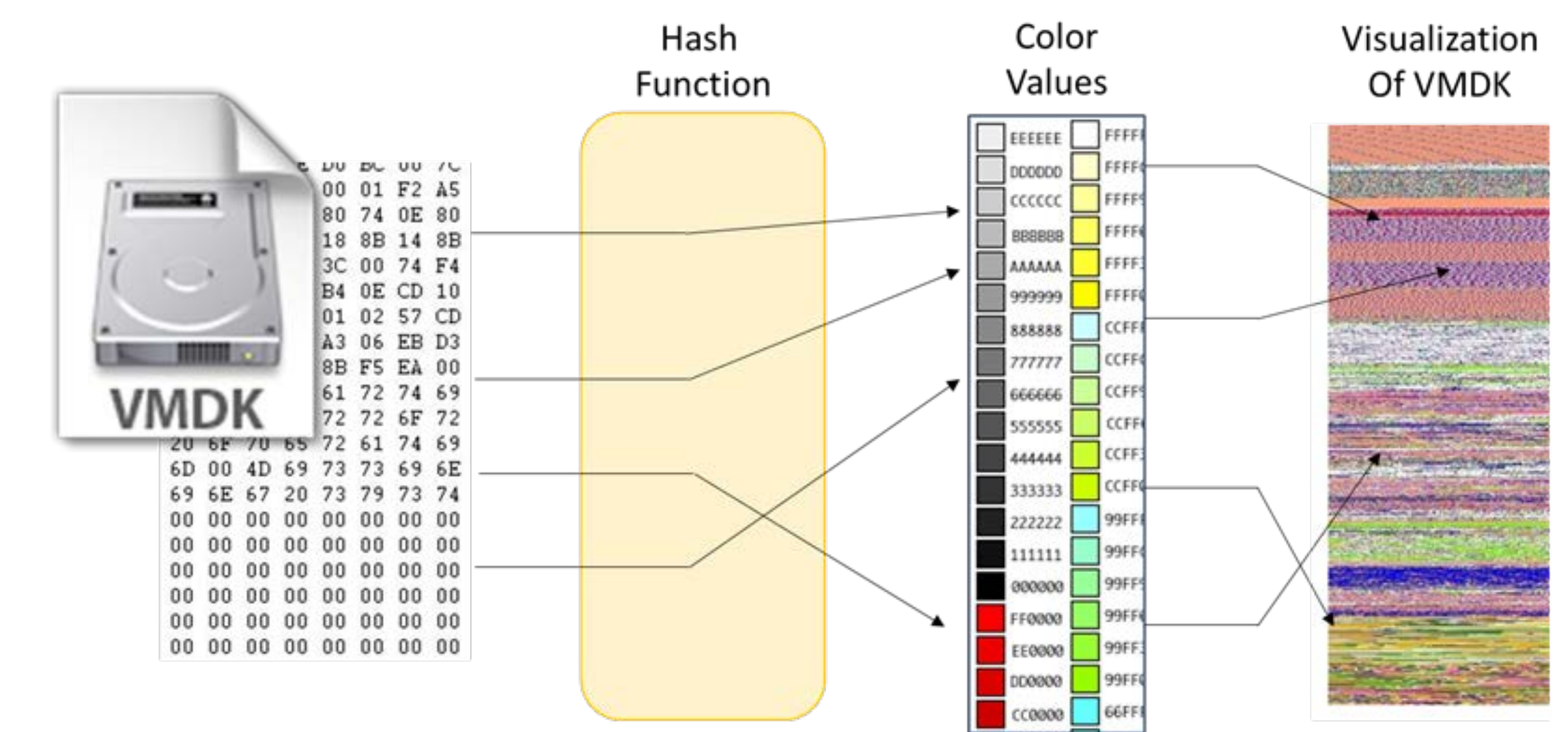
RELEVANCE / OBJECTIVES

Relevance

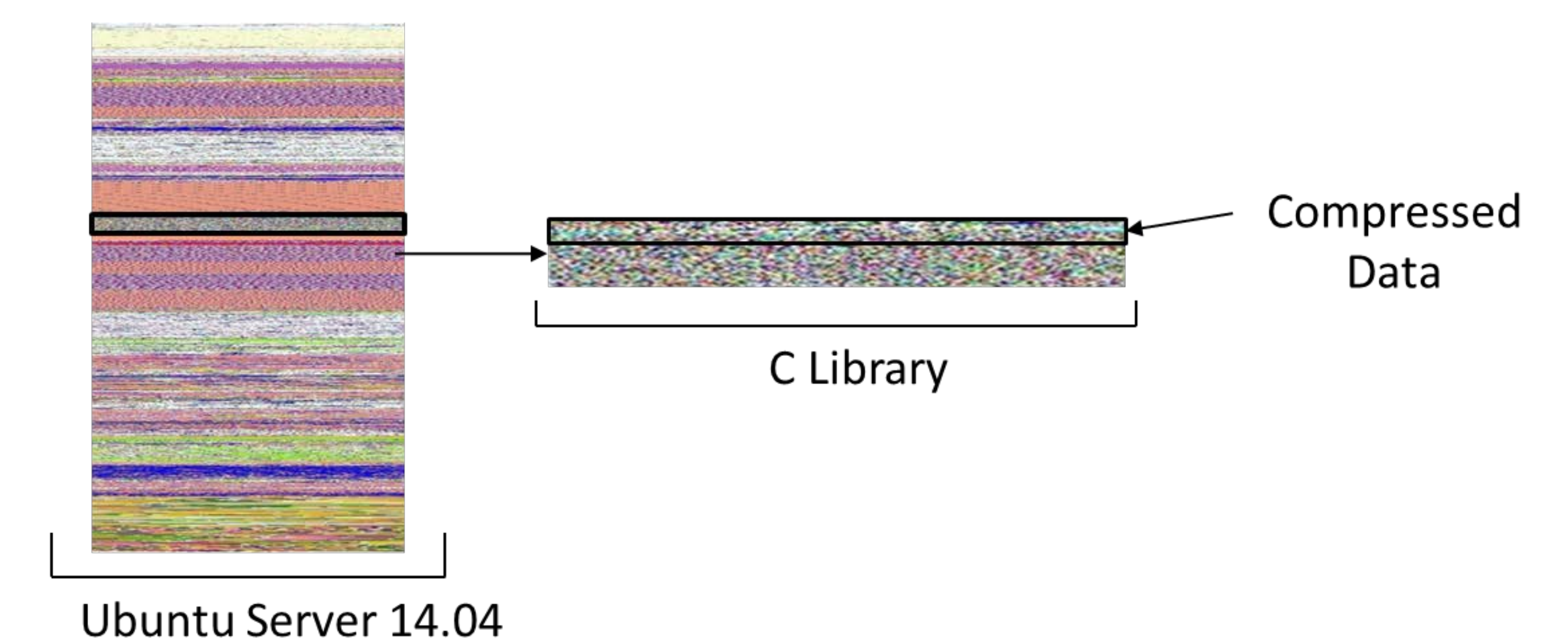
- This research develops a new, out-of-band model for monitoring the integrity of VMs.
- It uses visual analytics to identify malware embedded within guest operating systems, files, and software.
- The proposed approach renders a two-dimensional, colored depiction of each guest's disk image.
- Depictions are analyzed using a pattern recognition algorithm.

APPROACH / TECHNIQUES

- Visualize disk images:



- Analyze using machine learning techniques:



MILESTONES / DELIVERABLES

Deliverables

Report:

- An algorithm for efficient conversion of virtual machine / container / unikernels images into visual depictions
- An implementable machine learning algorithm for detecting compromised guests

Milestones

- 4 m: Configure test environments, acquire smartphones & extract data
- 8 m: Create database & implement machine learning algorithm
- 12 m: Train algorithm & assess effectiveness of anomaly detection

INDUSTRY BENEFITS

Economics

- Provides value-added services without the additional liabilities associated with direct access to client images

Potential Member Benefits

- Gives a commercially-viable solution to a problem with a defined market.