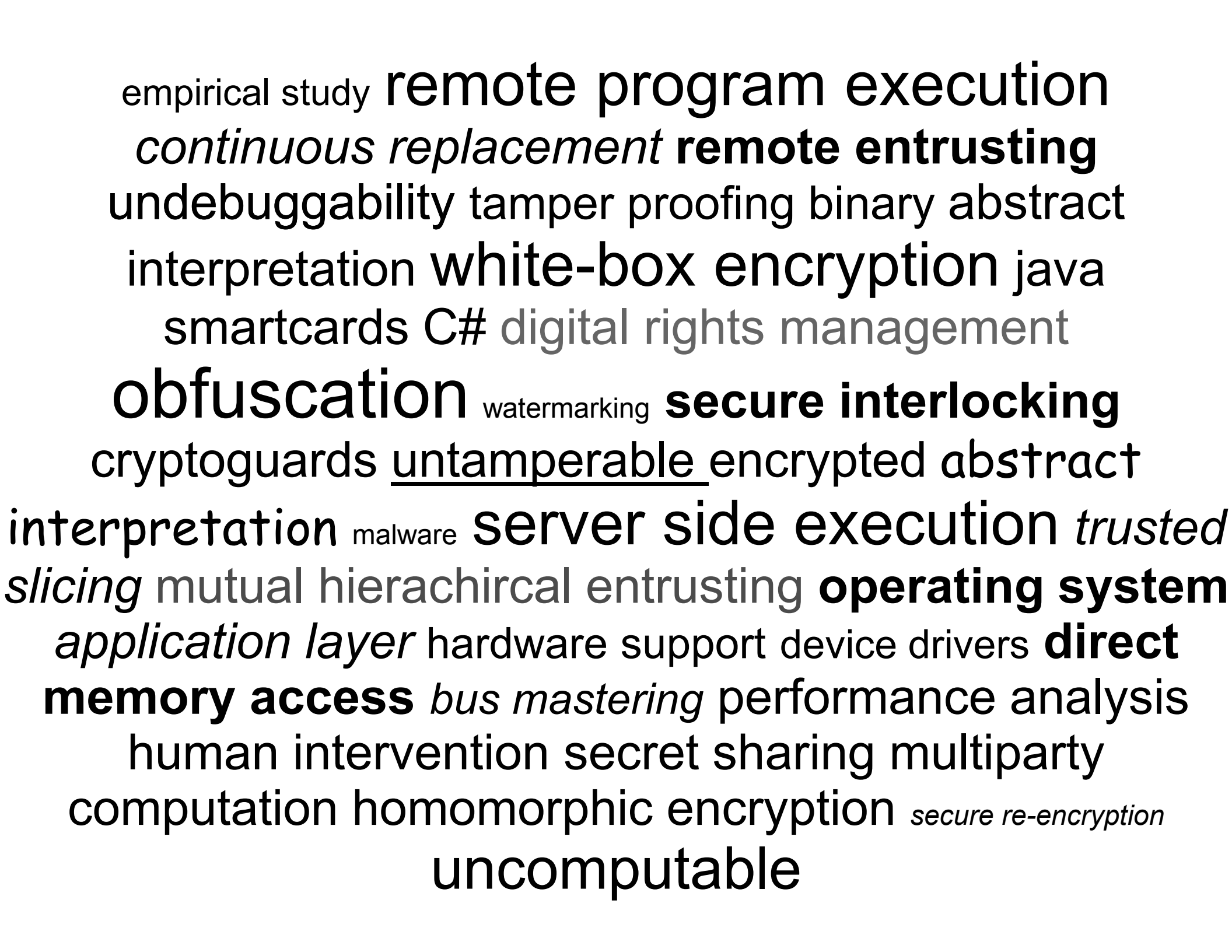
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continuous replacement remote entrusting
undebuggability tamper proofing binary abstract
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memory access bus mastering performance analysis
human intervention secret sharing multiparty
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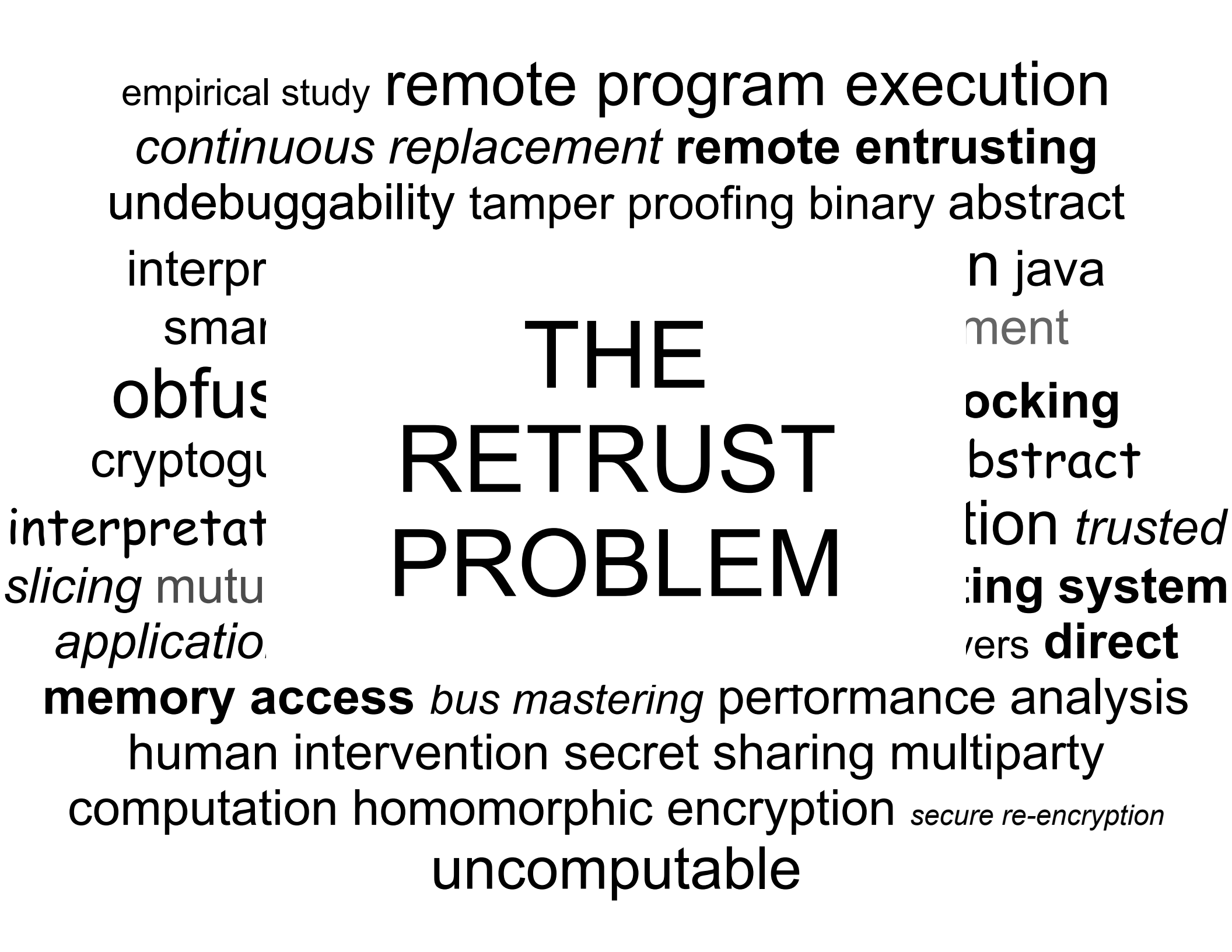
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THE RETRUST PROBLEM
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Outcome

- Project-wide Trust Model
  - Sufficiently Detailed: Comparison Possible
  - Sufficiently Open: No Solution Is Eliminated
  - Sufficiently Practical: Useful for builders
  - Sufficiently Theoretical: Useful for provers
  - Sufficiently Simple: No Time “Wasted”
- Fitting Existing Solutions
  - Trusted Slicing
  - WBRPE

Model Summary

RE-TRUST aims to preserve some set of properties of the set of all execution traces of a remote program.

Additional Properties:

- Confidential properties
- Prevent offline execution
- Amount of work performed by server
- Total work performed

Example Problem: Car Race Game

Attacker's Task:

- Modify a particular variable

Attackers Property:

- State trace of the program except for modification of a specific variable

Defenders Property:

- State trace of a subset of variables

Additional Properties:

- Server is scalable
- Trace is not re-executable on new input

Example Problem: SETI

Attacker's Task:

- Return fake results

Attackers Property:

- State trace of the program except for modification of a specific variable

Defenders Property:

- State trace of a subset of variables

Additional Properties:

- The value of a key remains secret

Example Solutions

Slicing	Static Checksum	WBRPE
Maps from execution trace to state trace	Checksum on the execution trace implies static checksum	