



Implicit-Storing and Redundant- Encoding-of-Attribute Information in Error-Correction-Codes

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Implicit Storing (IS)

Leverage error correction codes used for cache and memory data protection

- **encode** extra information
- **without storing** the information
- **infer** the information on reads

Based on **error** and **erasure** coding

Needs **shortened codes**: the number of protected data bits to be smaller than what can be protected by an error correction code

😊: **reduce area and energy** with **low performance overhead**

😞: Hurts error correction **code strength**



Redundant Encoding of Attribute Information (REA)

Exploit fine granularity of protection in caches and memory

- **encode** the same extra information in **multiple codewords**
- **decode** the extra information from **multiple codewords**

Needs the **multiple codewords** to be **correlated**

😊: improve **strength of the code** that **implicitly stores** or **tags** extra info

😐: not full strength recovery

😊: **minimal area, energy, and timing overheads**

Several **IS** & **REA** uses: **reliability, performance, security, energy**



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We would be glad to see you all at:

Session 2B - Resilience I (15:30-17:30)