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Secure Iris Recognition

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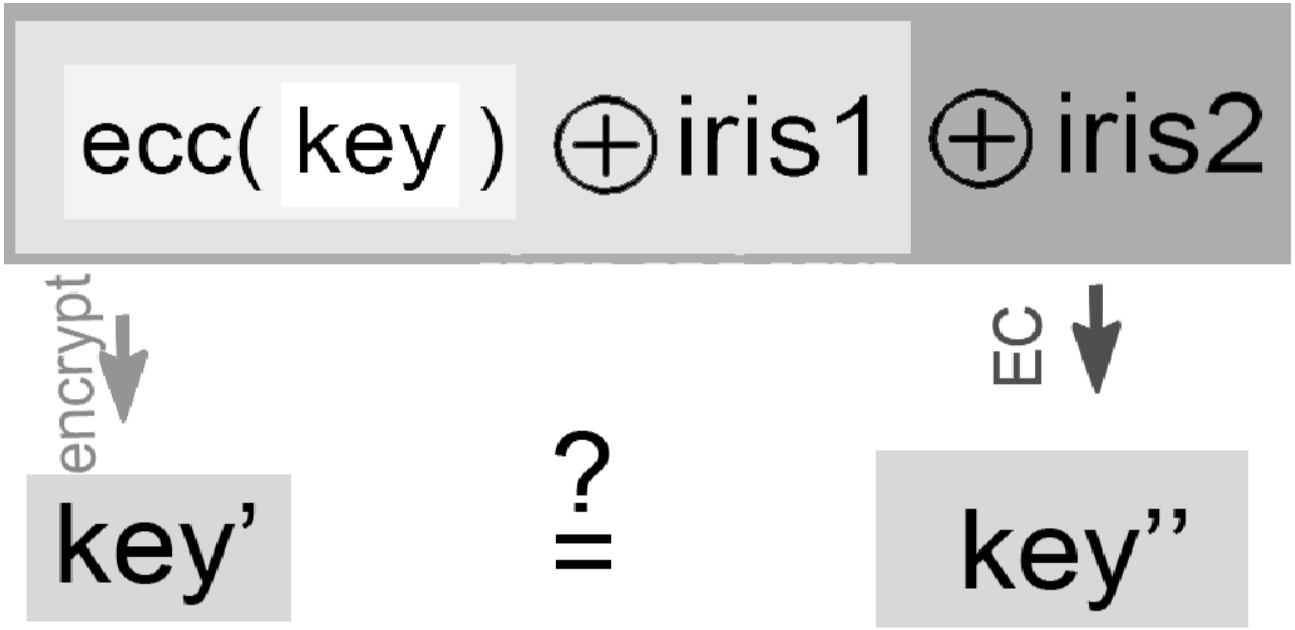
Why Iris Recognition?

- Convenient
- Permanent, intricate
- Responsive to light
- Impossible to surgically modify without unacceptable risk to vision

Issues

- Tolerate small changes
- Cannot directly hash iris code
- Goal: authenticate users based on hashed code

XOR-ECC Method



- Tested with various methods of error correction

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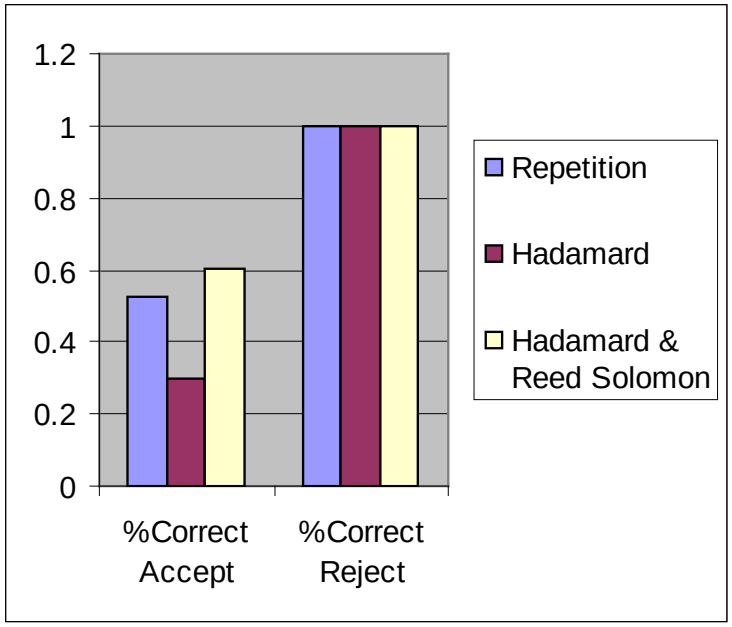
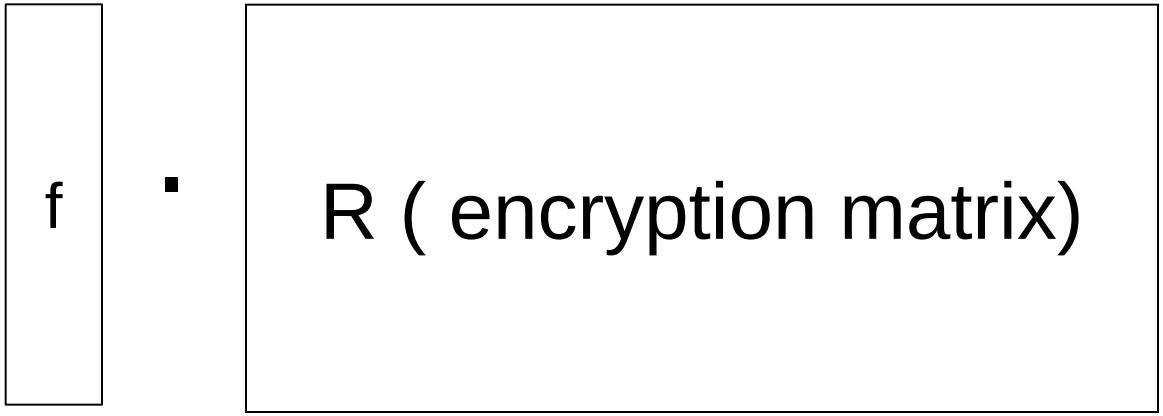
Results



- 3 irises stored in the database for one person: 1-0.4^3 = 94% chance of being correctly accepted.

Current key sizes: (bits)
Repetition: 100
Hadamard: 200
Hadamard & Reed Solomon: 200

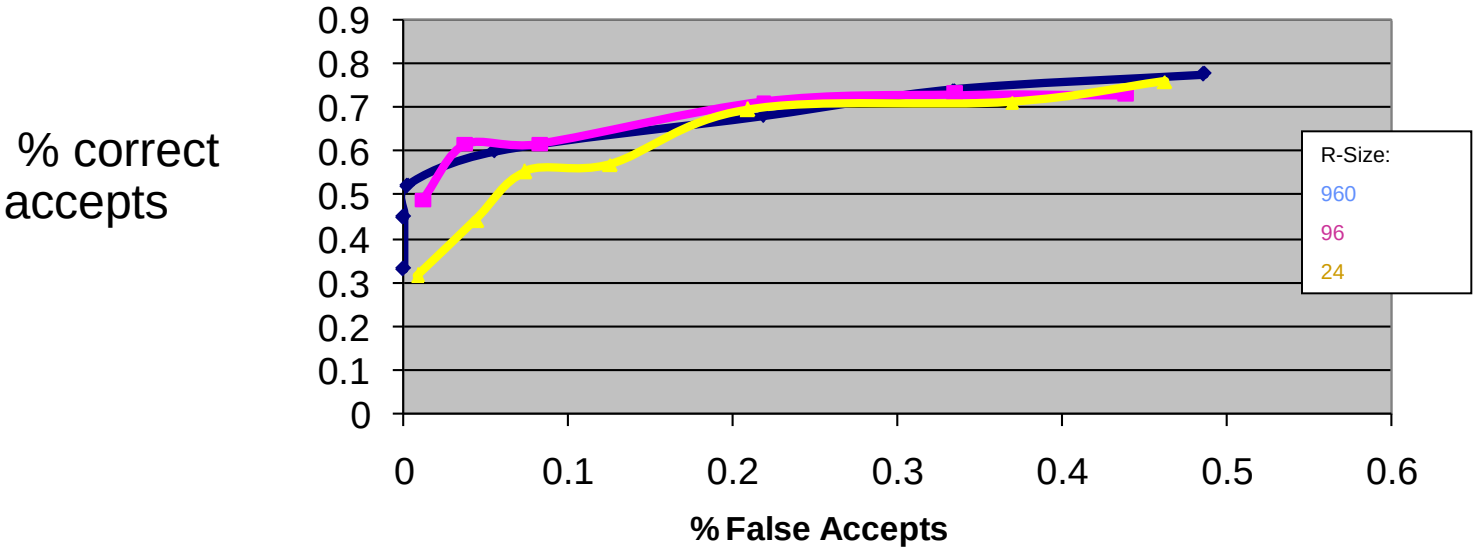
Random Projections



-Reduce dimensionality, preserve distance.

-Take irisCode1 (dot) R – irisCode2(dot)R, and evaluate the difference. As long as it is below some number, treat it as a match. Otherwise, reject.

Random Projection Results



-31 times faster than XOR-ECC
-Less accurate

Conclusion

- Compared different methods of secure hashing when applied to iris recognition

-Tested random projection: faster but less accurate.

- Looked at different methods of error correction for XOR-ECC method

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