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*A fast and efficient algorithm to protect privacy in iris recognition systems.*

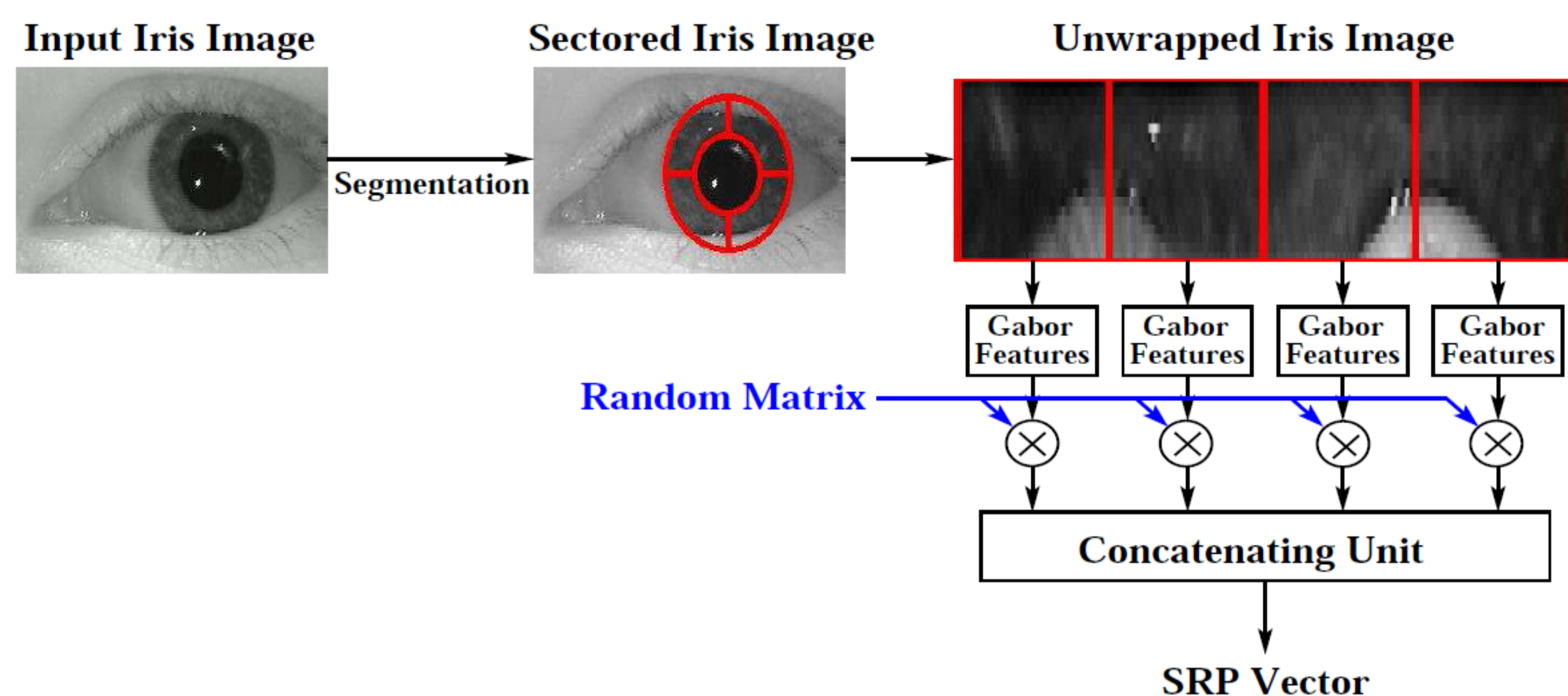
## Problem

- Develop a cancelable scheme for iris biometrics.
- The transformation should satisfy the requirements below :-
  - Different templates** for different applications.
  - Non-invertibility.**
  - Revocation and reissue** when compromised.
  - Retain original performance.**

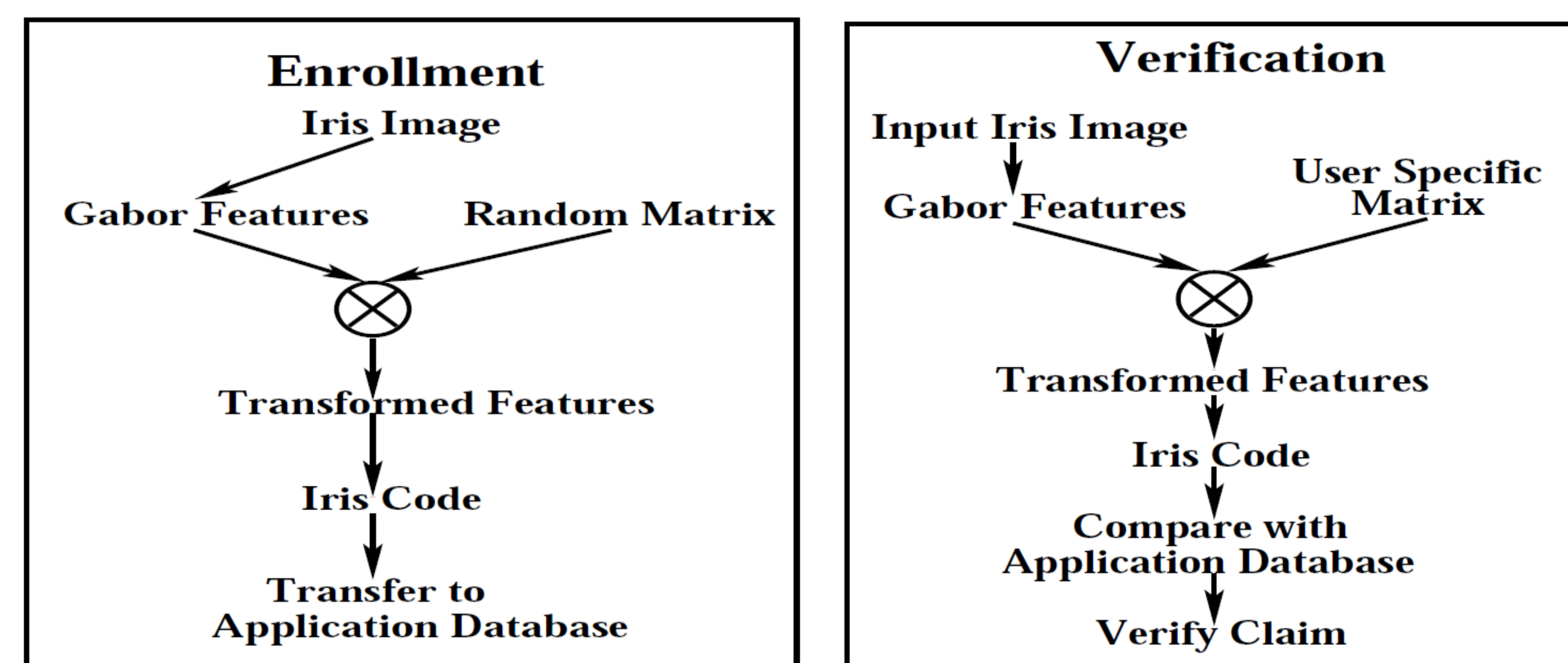
## Motivation

- Iris patterns are **unique** to each person.
- Cannot be modified** with out losing vision.
- Hence essential to **prevent theft.**

## Proposed System



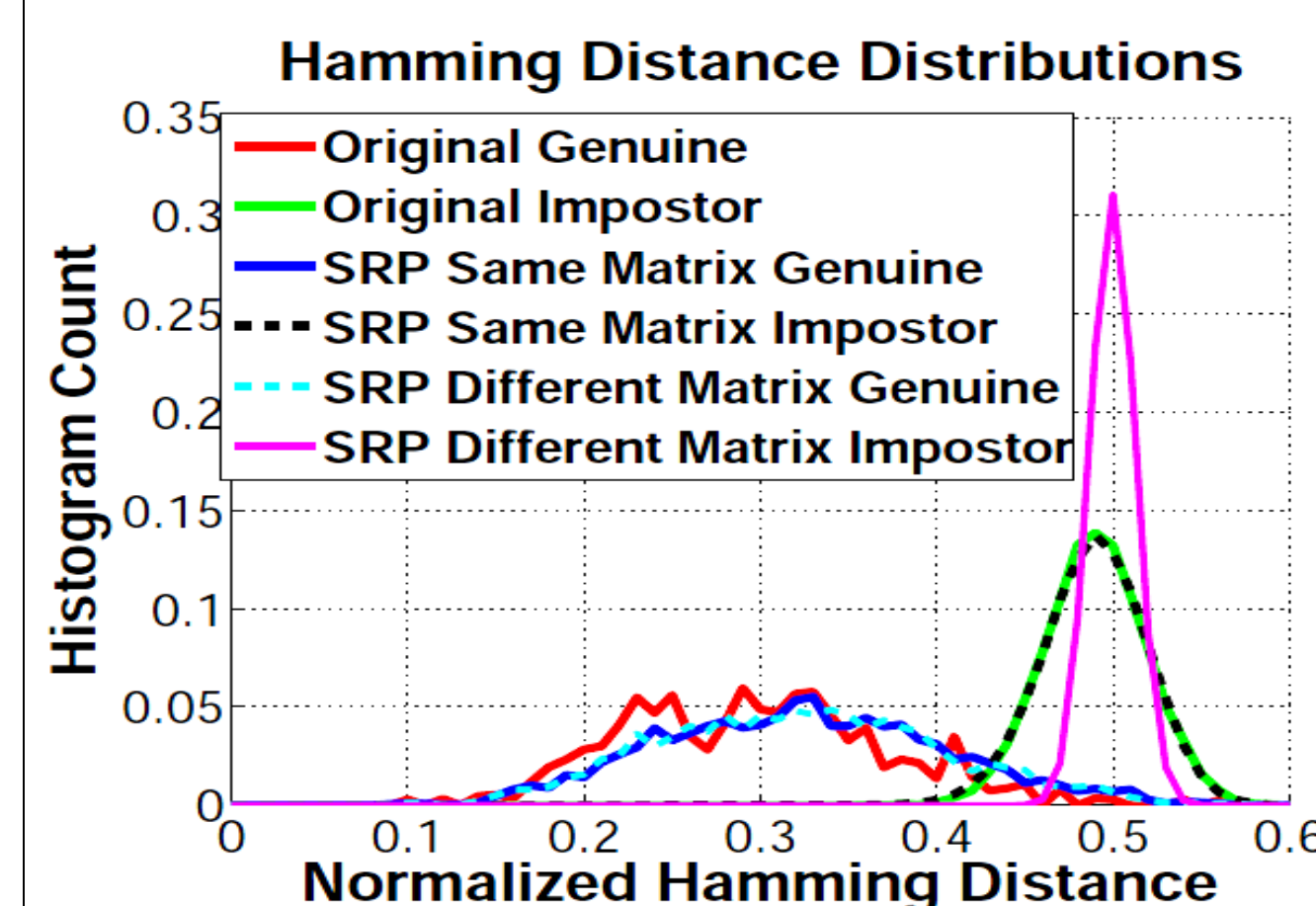
## Enrollment & Verification Modules



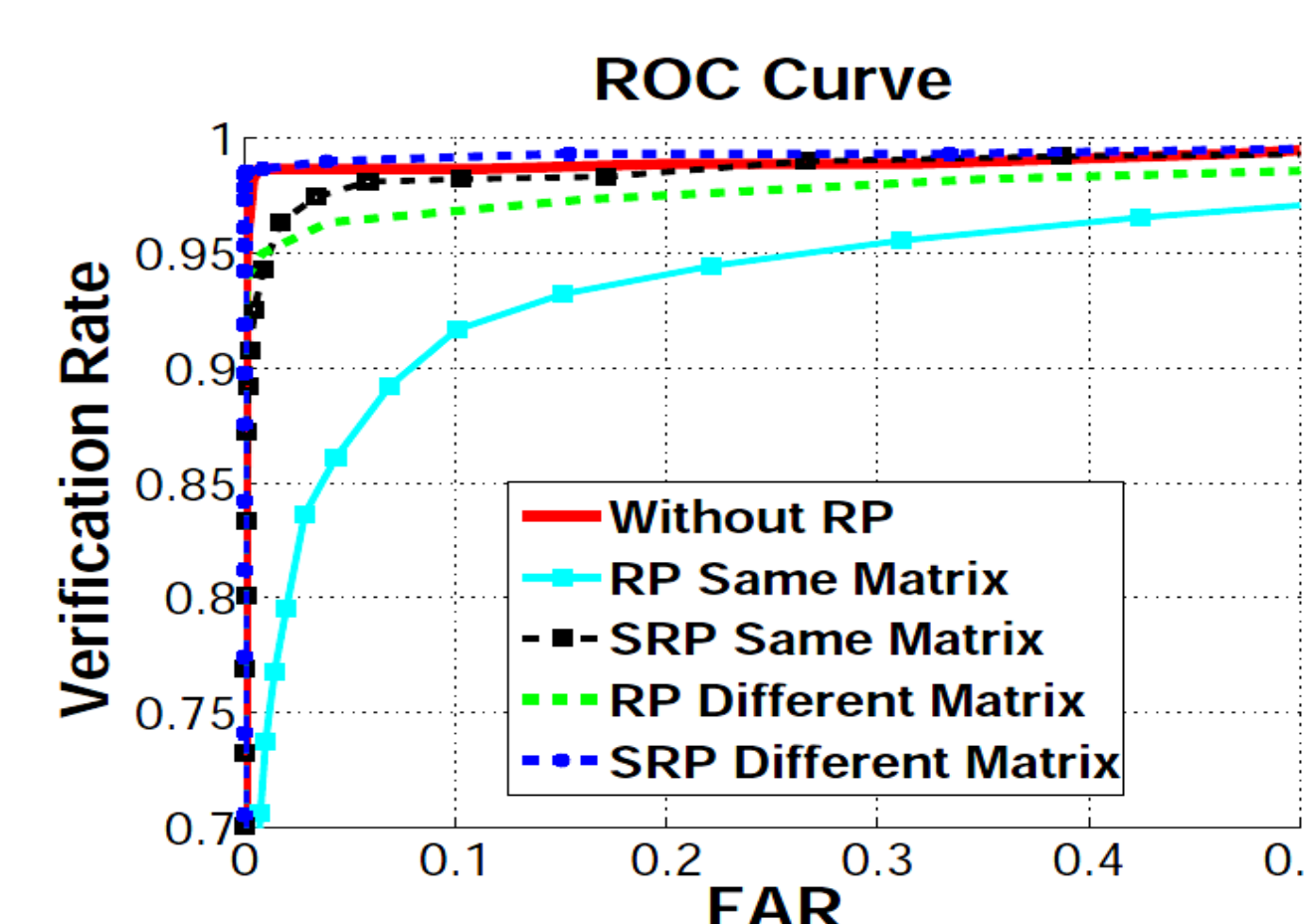
- Johnson Lindenstrauss (JL) lemma** - existence of mappings preserving approximate distance in lower dimensions.
- Projection using **random Gaussian matrix** is one such mapping.

## Experimental Results

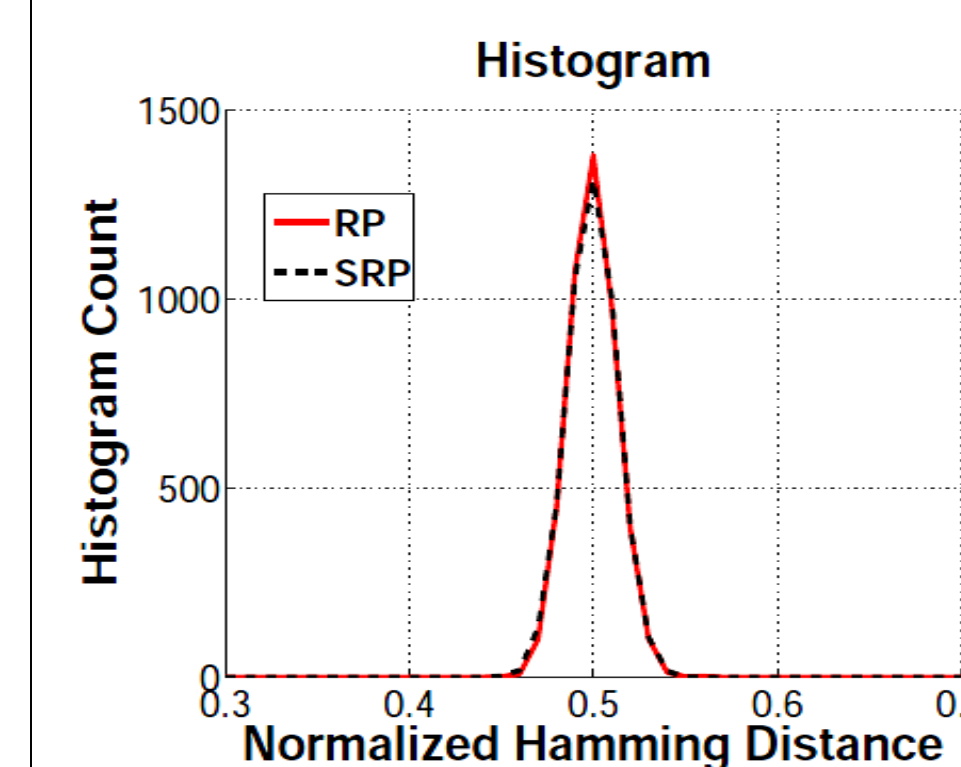
### Distance Distributions



### ROC Curves



## Experimental Results



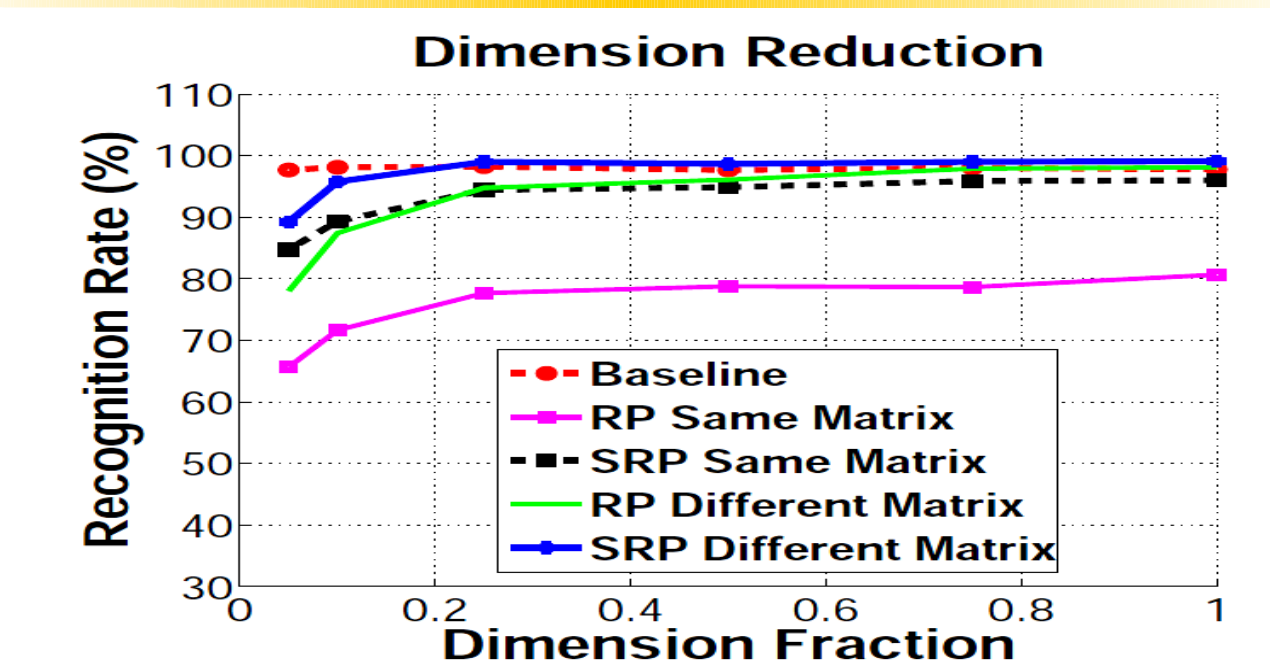
### Hamming Distance Statistics

Methods	Mean	Standard Deviation
Without RP	0	0
RP, Same Matrix	0.4999	0.0124
SRP, Same Matrix	0.4993	0.0124
RP, Different Matrix	0.5001	0.0126
SRP, Different Matrix	0.4997	0.0136

### Comparison with Salting

Quantity	Salting					SRP
RR(%)	94.2	94.7	95.3	96.6	94.0	97.7
HD	0	.467	.480	.491	.494	.499

### Effect of Dimension Reduction



## Advantages

- Meets the **requirements** of cancelability.
- Extremely **fast.**
- Can be **incorporated** easily into existing recognition systems.

## Conclusion & Future Research

- Proposed a **fast method** to protect privacy in iris biometrics.
- Study the effects of **mis-alignment.**
- Analyze effect of **transformations** on non-invertibility of patterns.