



# Fog Computing : High Level Security System to Banking System.

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## How to Cite this Article:

Gedam, H. R. & Dhoke, S. (2026). Fog Computing : High Level Security System to Banking System. International Journal of Creative and Open Research in Engineering and Management, <i>02</i>(05).

<https://doi.org/10.55041/ijcope.v2i5.055>

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## Abstract:

Cloud computing provides flexible and scalable services but suffers from several security challenges such as unauthorized access, data breaches, and insider attacks. This paper proposes a high-level security system using fog computing to enhance data protection. The system integrates user behavior profiling and decoy information technology to detect abnormal activities and mislead attackers. Encryption techniques such as AES and RSA are also used to ensure secure communication. The proposed system improves cloud security by preventing unauthorized access and protecting sensitive data.

## Key words:

Fog Computing, Cloud Security, User Behavior Profiling, Decoy Technology, AES, RSA



## 1. Introduction:

Cloud computing allows users to store and access data remotely using internet services. However, it faces challenges such as data loss, account hijacking, and insecure APIs.

Fog computing extends cloud computing by bringing computation closer to the network edge, reducing latency and improving security.

### 1.1 Objective:

The main objective of this system is to:

Detect unauthorized access  
Protect sensitive data  
Mislead attackers using decoy data  
Enhance overall cloud security

### 1.2 Benefits:

Detects abnormal user behavior  
Prevents data theft  
Provides additional security layers  
Improves system reliability

### 1.3 Challenges:

Complex implementation  
High processing requirements  
Difficulty in detecting sophisticated attacks

## 2. System architecture and Design:

### 2.1 Architecture:

The system consists of three main modules:

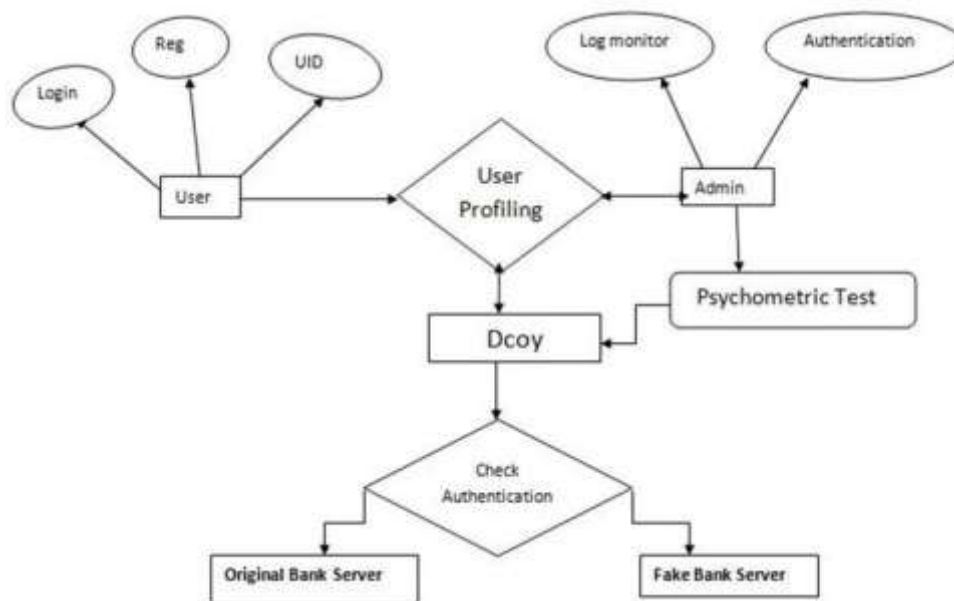
Cloud Computing Module

User Behavior Profiling Module  
Decoy Information Module

When a user logs in, their behavior is monitored. If abnormal activity is detected, decoy data is provided instead of real data. After selecting a product, the customer can view the associated reviews. These reviews are segregated and analyzed, with a label indicating whether they are fake or real.



## Architecture diagram:



## 2.2 System Design:

Frontend: HTML, JSP Backend: Java  
Database: MySQL Server: Apache Tomcat

## 2.3 Module Description:

### 1. Registration and Login:

Users register and log in using credentials.

### 2. User Behavior Profiling:

Tracks user activity and detects abnormal patterns.

### 3. Decoy Data System:

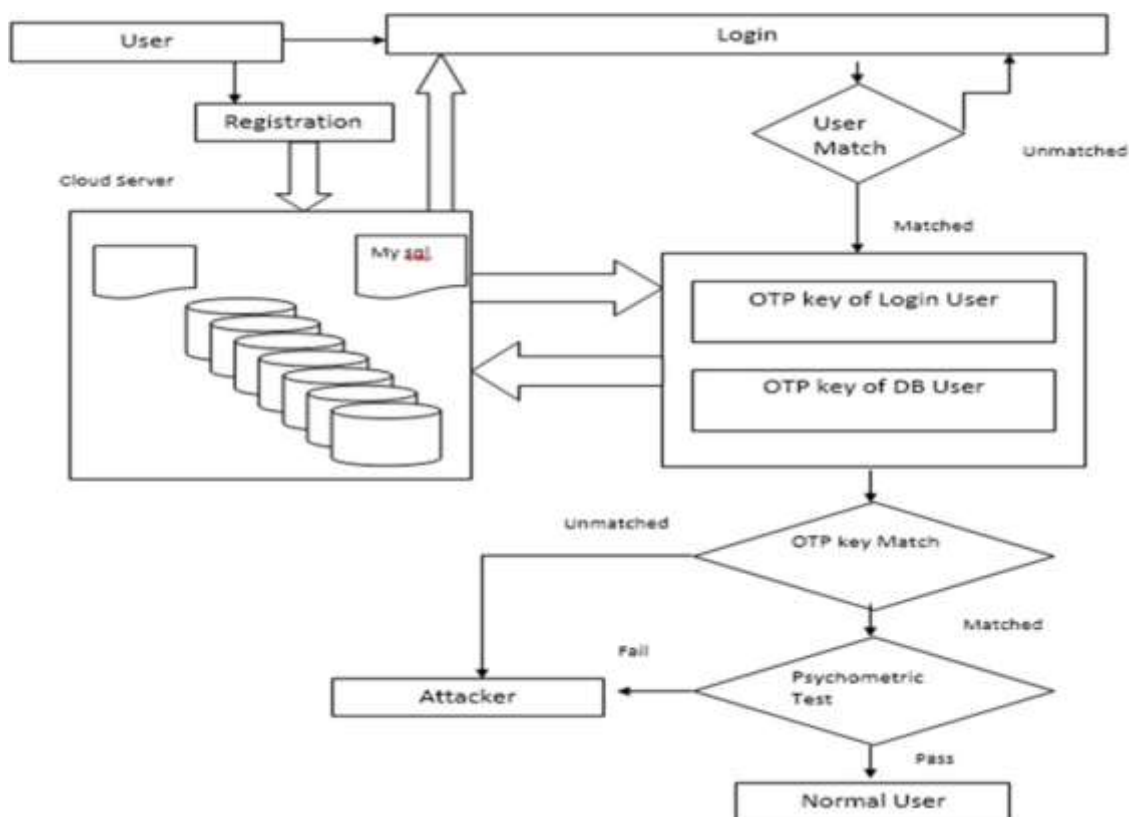
Provides fake data to attackers to protect real information.

### 4. Admin Module:

Manages users and system data.



**Flow Diagram:**



**Algorithm:**

- Step 1: Monitor user login and activity
- Step 2: Analyze behavior patterns
- Step 3: Detect abnormal access

- Step 4: Trigger security mechanism
- Step 5: Provide decoy/encrypted data

Additionally:  
 AES Algorithm: Used for encrypting data securely  
 RSA Algorithm: Used for secure key exchange

**4 Conclusion:**

The proposed system enhances cloud security using fog computing by combining behavior analysis and decoy techniques. It effectively detects unauthorized users and protects sensitive data by misleading attackers. This approach provides a strong security mechanism for modern cloud environments.

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