FinShield Hackathon 2025

Bank of India (BOI) has successfully hosted FinShield Hackathon 2025 under the PSB's FinTech & Cybersecurity Hackathon 2025 series, in collaboration with IIT Hyderabad.

- **Overview of the problem statement and its relevance to banking/FinTech**

  Bank of India took the initiative of Hackathon with great enthusiasm and sincerity. While most of the banks went ahead with one problem statement for the Hackathon, we saw potential in this activity and offered two problem statements to witness range of innovative solutions from the participants.

The two problem statements were-

(i) to Develop Credit Risk Management Model using alternative data to arrive at probability of default, search and tracking of defaulter and
(ii) to provide solution to tackle Impersonated Registration/Frauds in Mobile & Internet Banking along with behaviour-based user authentication with password less login.

i) Develop Credit Risk Management Model using alternative data to arrive at probability of default search and tracking of defaulter.

Large part of the population in our country does not have access to formal credit channels due to absence of credit history and effective creditworthiness evaluation mechanism. Consequently, they either remain unbanked or fall prey to local money lender at

exorbitant rate of interest. Traditional credit scoring models are inadequate for assessing the creditworthiness of individuals and businesses without extensive credit histories as they depend on historical financial data like credit reports and bank statements.

Therefore, it is required to develop robust credit risk management model using alternative data such as micro to small payment behaviour, recurring payments, post-paid utility bill payments etc.

Hence this problem statement was given to develop robust credit risk management model using alternative data such as micro to small payment behaviour, recurring payments, post-paid utility bill payments, social media activity, mobile phone usage, and utility payments to gauge the credit worthiness of the customers.

ii) **Impersonated Registration/Frauds in Mobile & Internet Banking along with behaviour-based user authentication with password less login.**

Registrations by fraudsters, impersonated as customer, in mobile & internet banking applications has emerged as one of the major contributors to digital frauds. Fraudsters impersonate as bank, courier, customs or police officials and send dubious link to customer to install fake KYC, custom or rewards app and siphon off money from customers account through social engineering and taking control of customer's mobile phone.

Behavior-based user authentication provides a dynamic, secure, and user-friendly way to protect mobile banking applications from fraud. However, optimum balance of security, user convenience, and multi-factor availability is not achieved yet. Hence this problem statement was chosen.

- **Description of the solution developed by the team**

Winner of Problem Statement 1: Doom n Gloom

Solution: RISKON: Response-Informed Scalar Kinetics for Optimal Nudging, Credit Scoring for the under banked Population.

The core innovation is the conceptualisation of creditworthiness, not as a static score, but as a continuously evolving scalar potential (Ψt), modelled using a system of Ordinary Differential Equations (ODEs) that capture an individual's financial behaviour over time.

This potential is conceptualised as a field that represents an individual's creditworthiness, which responds dynamically to their real-time financial actions and the ambient economic environment, much like a physical particle responding to a force field.

Srisailesh	*Indian Institute of Petroleum and Energy*
Kritagya Sharma	*Indian Institute of Petroleum and Energy*
Nandinee	*Indira Gandhi Delhi Technological University for Women*
Eshita Nagaria	*Indira Gandhi Delhi Technological University for Women*

Winner of Problem Statement 2: Jigyasa

Solution: SuRaksha is a continuous, password-less authentication system that integrates behavioural biometrics (keystroke dynamics, touch gestures, swipe patterns, and optional voice signals) with post-quantum cryptography (PQC).

SuRaksha offers invisible, continuous authentication, eliminating password fatigue and OTP delays.Behavioral data collection integrates seamlessly into existing UI interactions, ensuring a frictionless experience. Features like triple-tap emergency logout and real-time fraud alerts enhance user trust and safety.

Amit Anand	*Indian Institute of Information Technology Kottayam*
Amruth Ayaan Gulawani	*Indian Institute of Information Technology Kottayam*
Suraj Sanjay Harlekar	*Indian Institute of Information Technology Kottayam*
Anushka Kapur	*Indian Institute of Information Technology Kottayam*

- **Role of the bank in mentoring and supporting the team**

Bank of India was instrumental in ensuring that there is constant connect with all participants and bank worked with IIT Hyderabad team to make the following happen-

1. Bank and IITH created a Hackathon execution committee and this group had the prime responsibility of successful conduct of the program. The group designed a registration portal with complete guide, important communications, Do's & Don'ts for clear communication with participants.
2. A document submission template was created so that all students have clarity about how to document their idea and no student should be left out just because they didn't know how to express their thoughts properly.

3. A scoring metric was created so that 15 member screening team of IIT H faculty, PHD scholars etc. screens all submission on the common parameters of technical feasibility, business potential, scalability and uniqueness. Each idea was evaluated twice by the screening committee to ensure they are evaluated objectively.
4. We monitored the progress of teams with mid-progress report submission in mid of August 2025 and addressed queries of participants through dedicated email id of hackathon.
5. Top 36 teams from each problem statement were invited to IIT H campus and bank provided accommodation in IITH guesthouse to all 218 participants from 70 outstation teams.
6. Bank also borne the cost of to and fro journey for all outstation participants so that none of the deserving candidates is left out due to logistic constraints.
7. All teams were given the opportunity to demonstrate their working solutions to the level 1 jury followed by detailed Q&A and feedback session. Finally, 9 top teams from each topic competed for the top 3 league.
8. The quality of prototype solutions & the demonstration by participants after multiple round of mentoring impressed Jury members that a "Special Mention" award of Rs. 1 Lakh was given to 4th team for each problem statement.
9. Participants were provided additional time & feedback from bank & IIT H experts to modify their solutions to meet the end requirement and make final presentations the next day.
10. The winners were felicitated by Shri. M. Nagaraju, Secretary, DFS, Govt. of India in the FinShield Conclave 2025 in the august presence of Shri. M. Ayappan, Jt. Secretary, DFS, Govt. of India, Shri. Rajneesh Karnatak, MD & CEO, Bank of India and senior bank executives and industry leaders.

- **Any notable outcomes, learnings, or future plans for implementation**

Key notable outcomes are-

1. Students developed mobile app, net banking applications, back office applications for bank giving bank & IITH a glimpse of universe of possible technical solutions
2. Gesture and behavioural biometrics related prototype demonstrated by participants showed strong potential for adoption.
3. Industry & academia gap bridged with students & faculty providing solution to real world problems by steeping into the shoe of bankers & payment industry professionals
4. Students explored various public forums to obtain data set for testing their models where bank provided them feedback around biasness in the data giving sharp results
5. Bank team provided real world benchmarks to students which was insights for them to bring their probability of default numbers come closure to traditional models risk score.
6. Bank of India has started work with winning teams to refine prototypes of both problem statements into a working and feasible solution.

- **Any other notable points.**

1. **Wide publicity** through social media, e-mailers, WhatsApp messages in student community groups, technical council of IIITs, IITs, NIT & other engineering colleges.

2. **Awards worth Rs. 22 Lakhs.** 1st prize of Rs. 5 Lakhs, 2nd prize of Rs. 3 Lakhs, 3rd prize of Rs. 2 Lakhs & Special Mention prize of Rs. 1 Lakh for each problem statement.
3. **Highest participation among all the peer banks -** Total 661 teams with 1377 participants with across country, 30+ IITs, IIITs & NITs.
4. **Gender Diversity**- 60% of participants were female.
5. **95% Outstation Participants**
6. The two-day event at IIT Hyderabad was held on 2nd and 3rd September where these teams presented their ideas to eminent jury members from IDRBT, IIT, McKinsey & Deloitte along with IT, Risk, Data Analytics team of Bank of India.

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