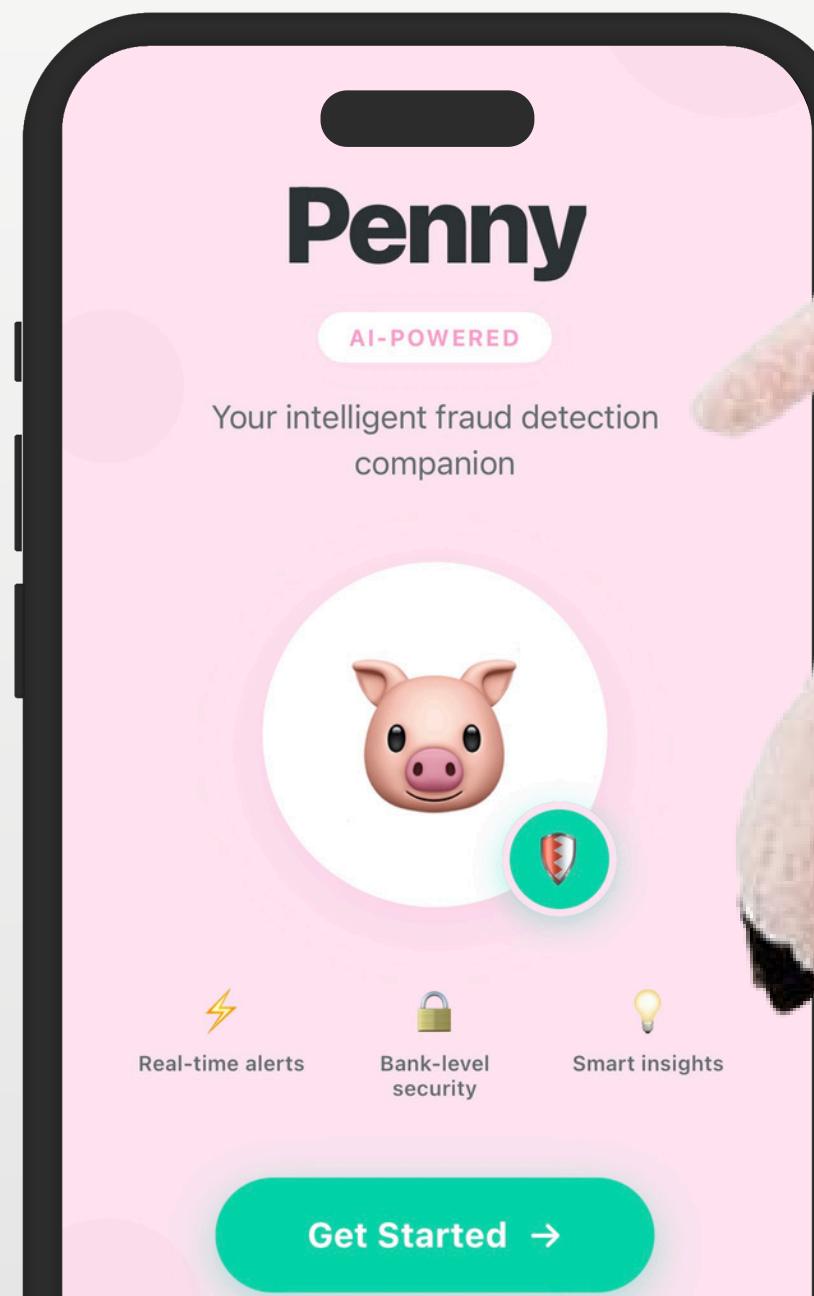


Penny Financial Fraud Detection



PROBLEM STATEMENT →

Meet our Team



Vanya Shrivastava

AI for Business



Rohan Patel

AI for Business



Jack Mechelke

AI for Business



Nicole Nargizian

Human Development and
Aging & Business Finance



Oma Tasie-Amadi

Business Administration



Samya Puri

Economics & Data Science



Siddhant Tapdiya

Business Administration



\$28.3 BILLION

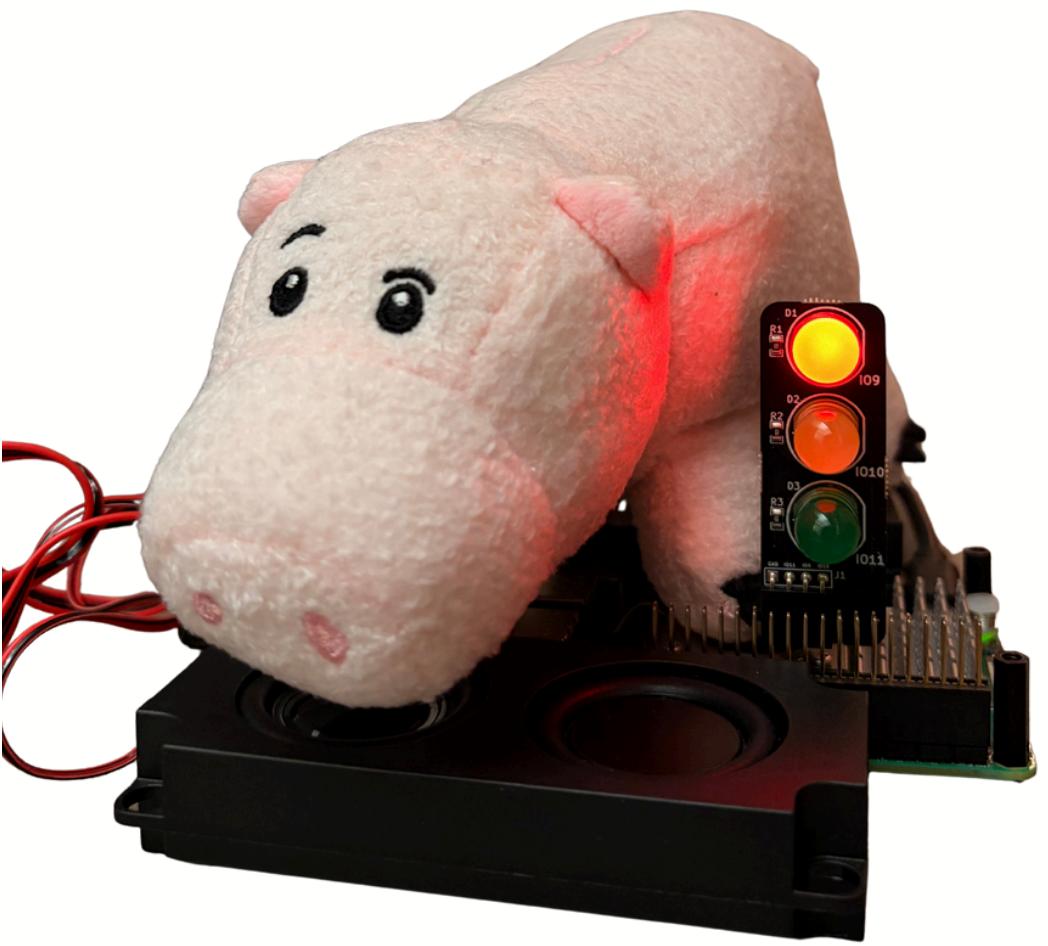
are stolen annually from Americans over the age of 60 due to
financial fraud and scam.



MARKET RESEARCH →

PRODUCT DESCRIPTION

Meet Penny



Voice Agent

Elevenlabs

Light Indications

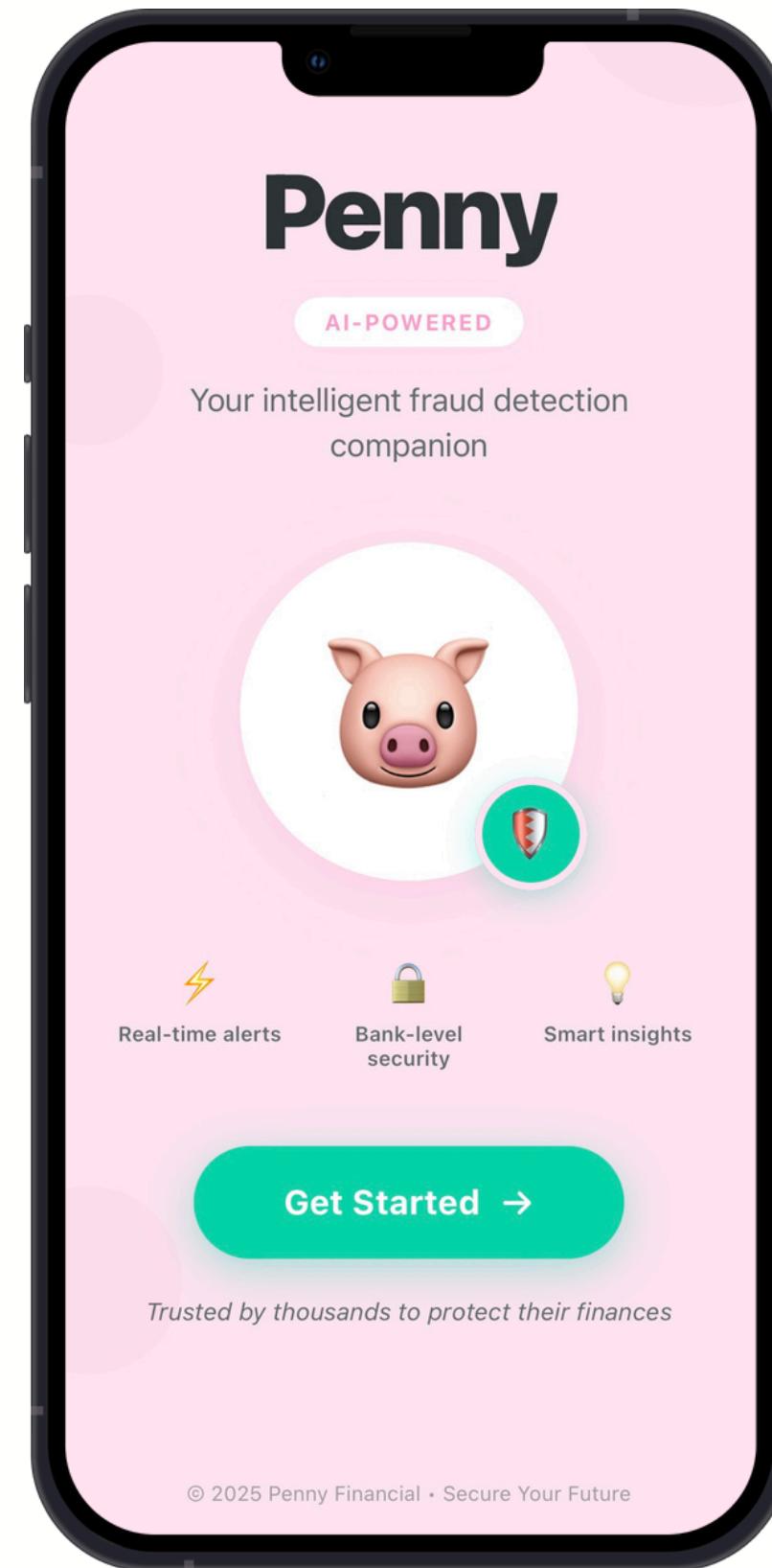
GPIO Stoplights

Mic Input

USB microphone

Encased

Piggybank stuffed animal



Alerts

Real-time

Hosting

Expo Go

Features

Call Monitoring

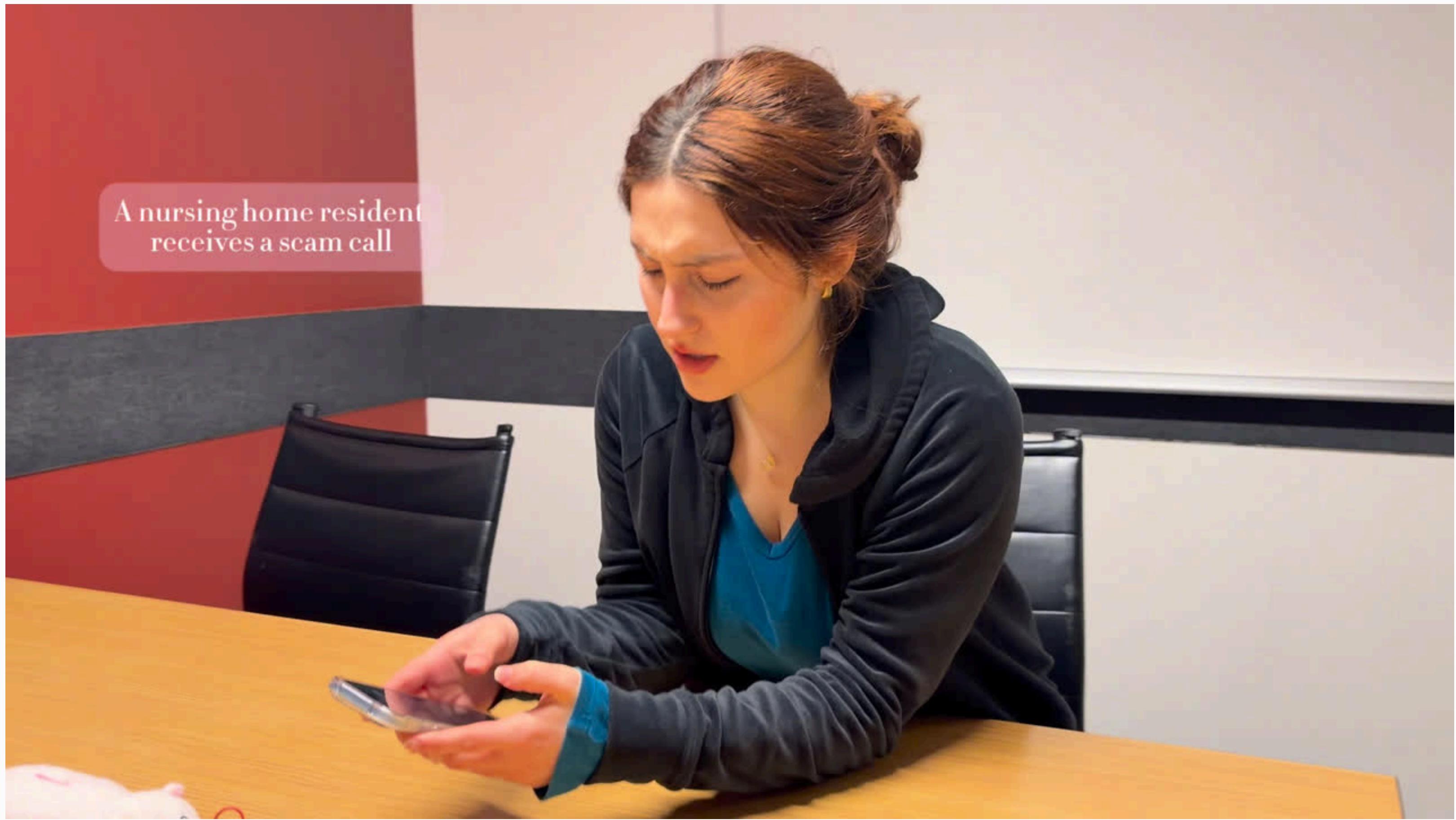
Push Notifications

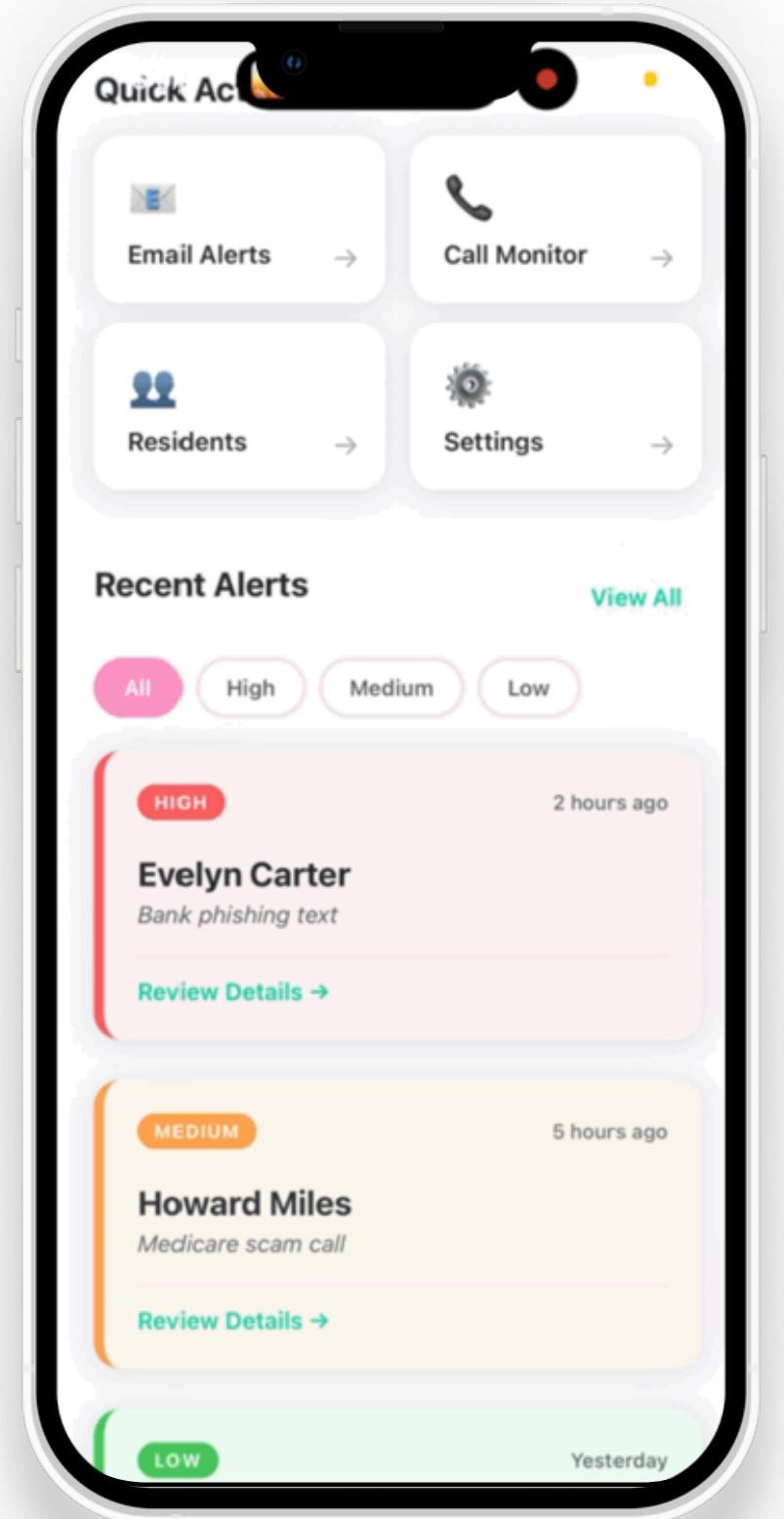
Email Classification



PRODUCT DEMO

A nursing home resident receives a scam call



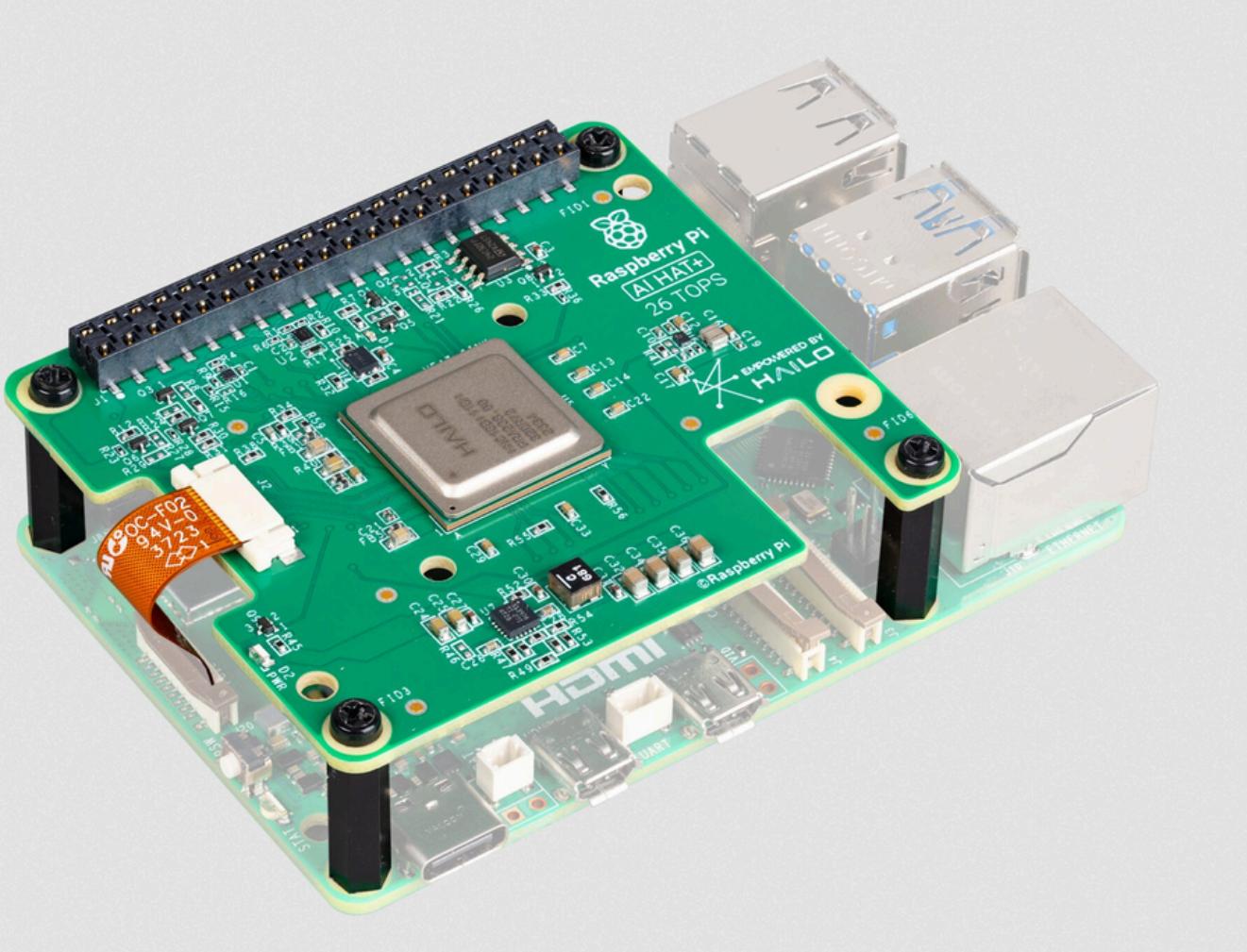


PRODUCT DEMO

iOs App

Built using React Native, Expo Go, and Node.js





TECH STACK

Raspberry Pi5

AI Hat+ module interfaced with USB speakers/mic and stoplight LEDs

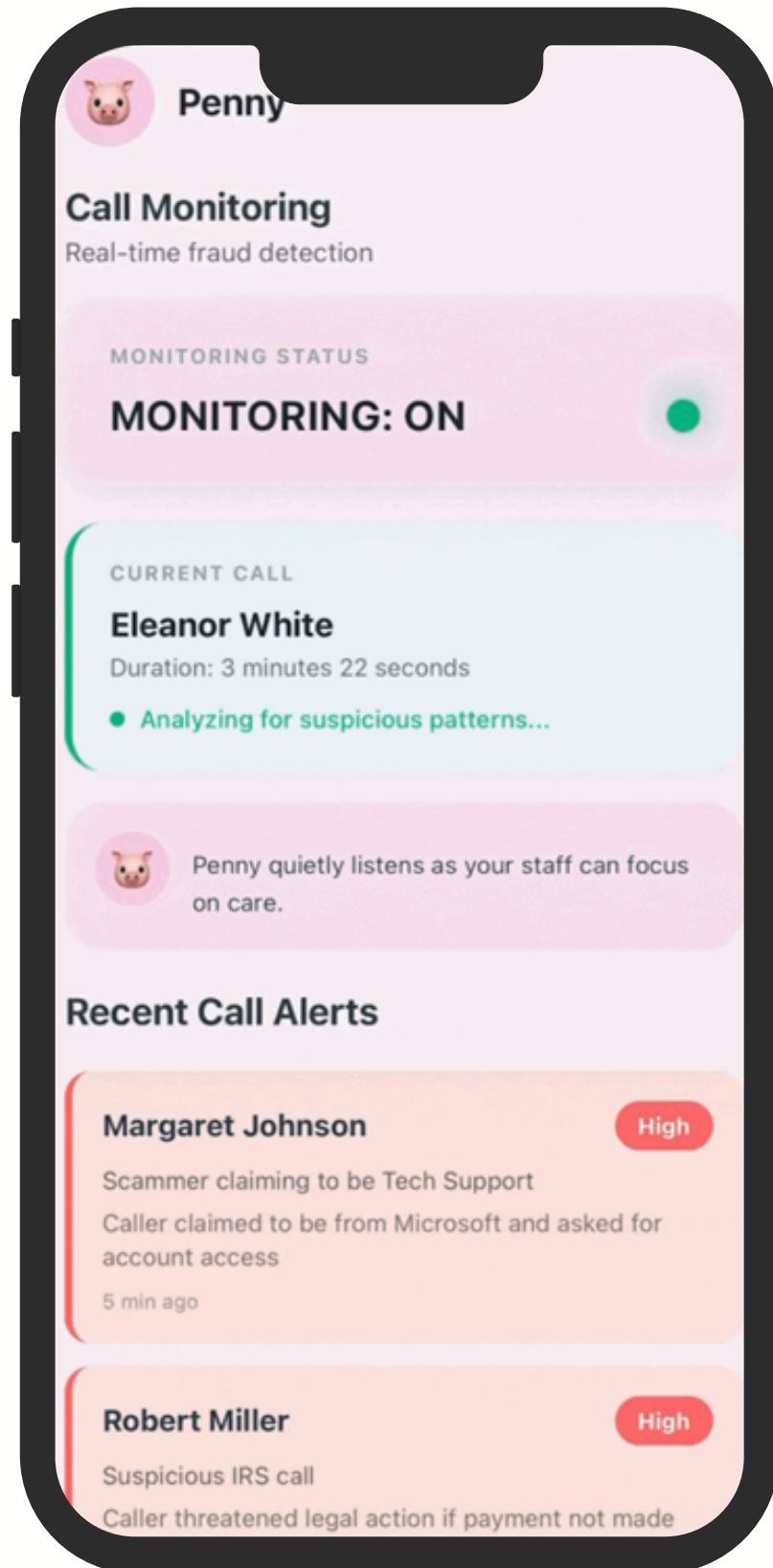


ML Training

DistilBERT Classifier

Classification types:

- Email Classification (IMAP)
- Call Classification
- Metadata Classification



Yellow Circle: Potential Scam Threat

The message falls between a confidence score of **50% to 75%**.

Green Circle: Safe Message

The message falls between a confidence score of **0% to 50%**.

Red Circle: Scam Detected

The message falls between a confidence score of **75% to 100%**.

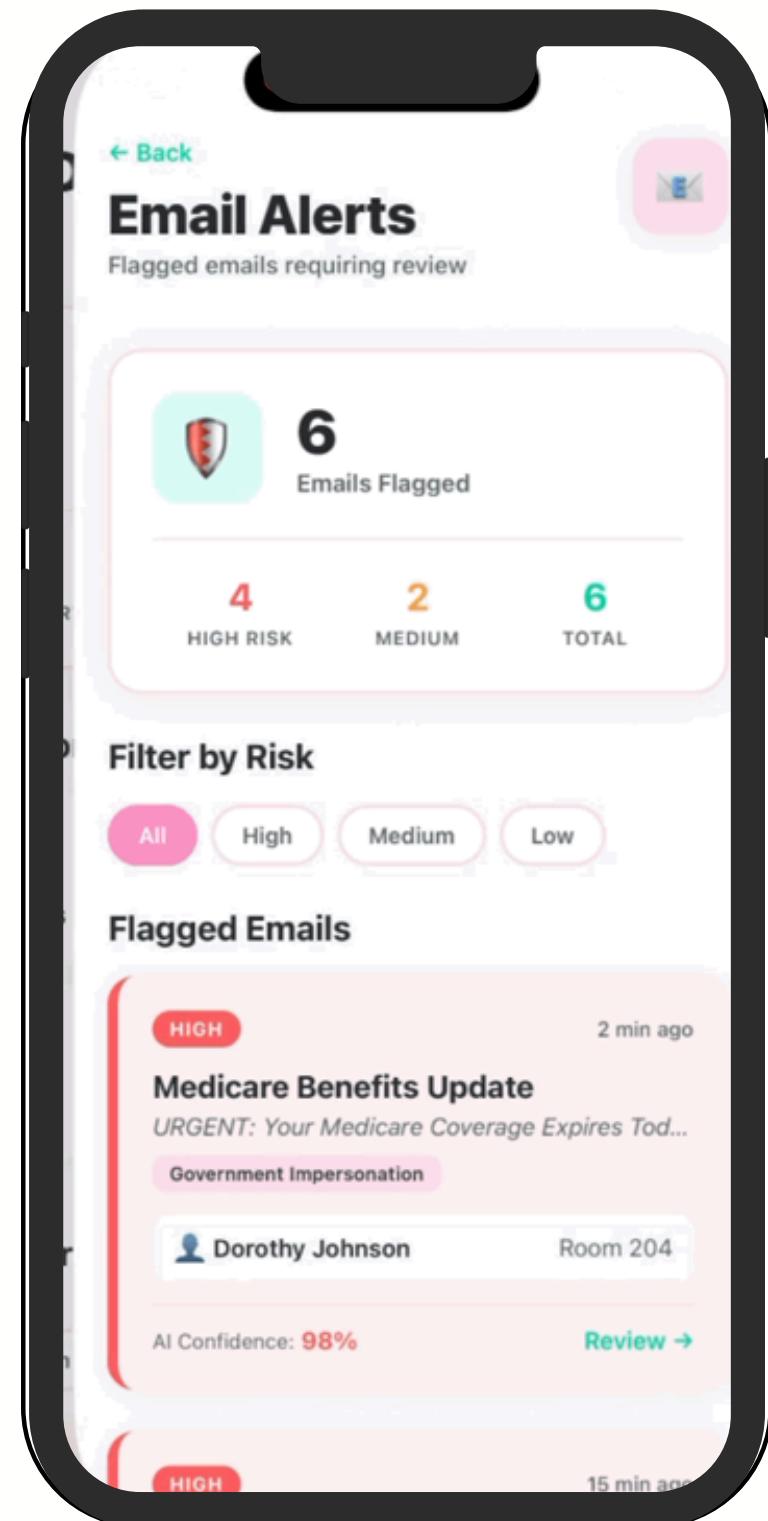


ML Training

Email Classification

Detects Scam in Email Messages

- OAuth Email Authentication
- Access and manage emails on Supabase



🟡 Potential Scam Threat

The message falls between a confidence score of **50% to 75%**.

🟢 Safe Message

The message falls between a confidence score of **0% to 50%**.

🔴 Scam Detected

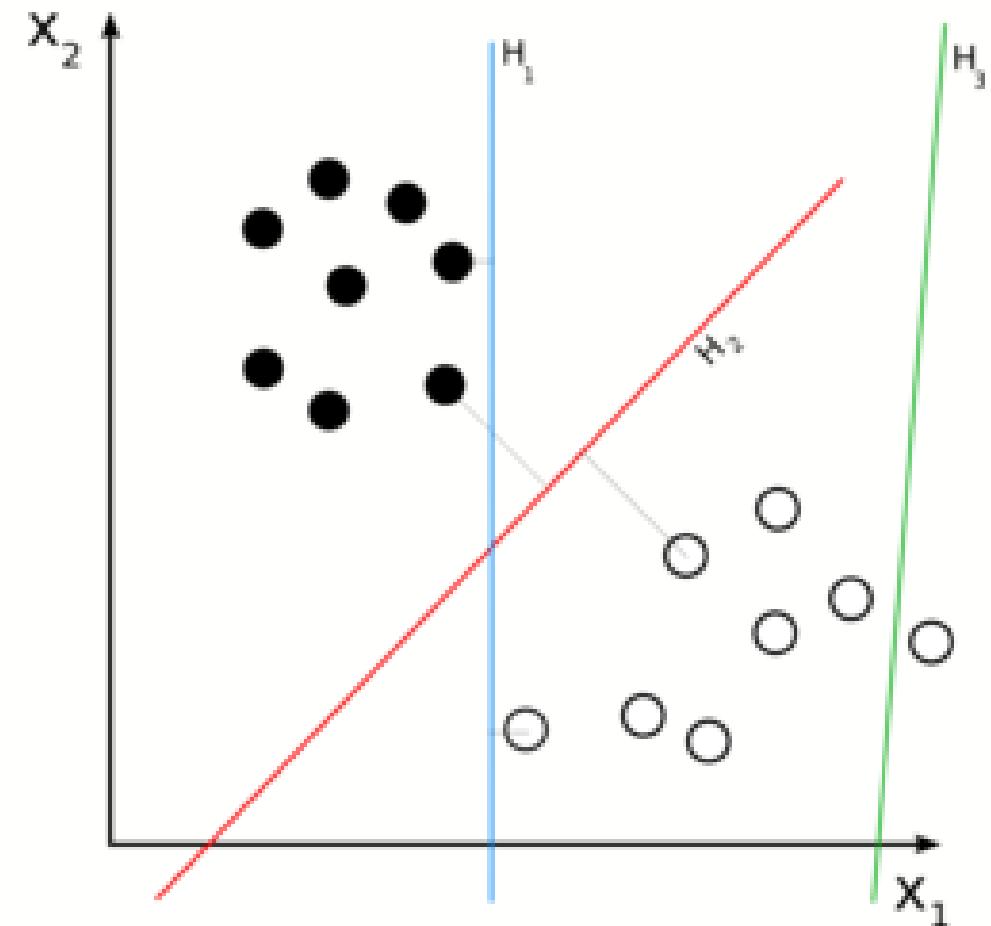
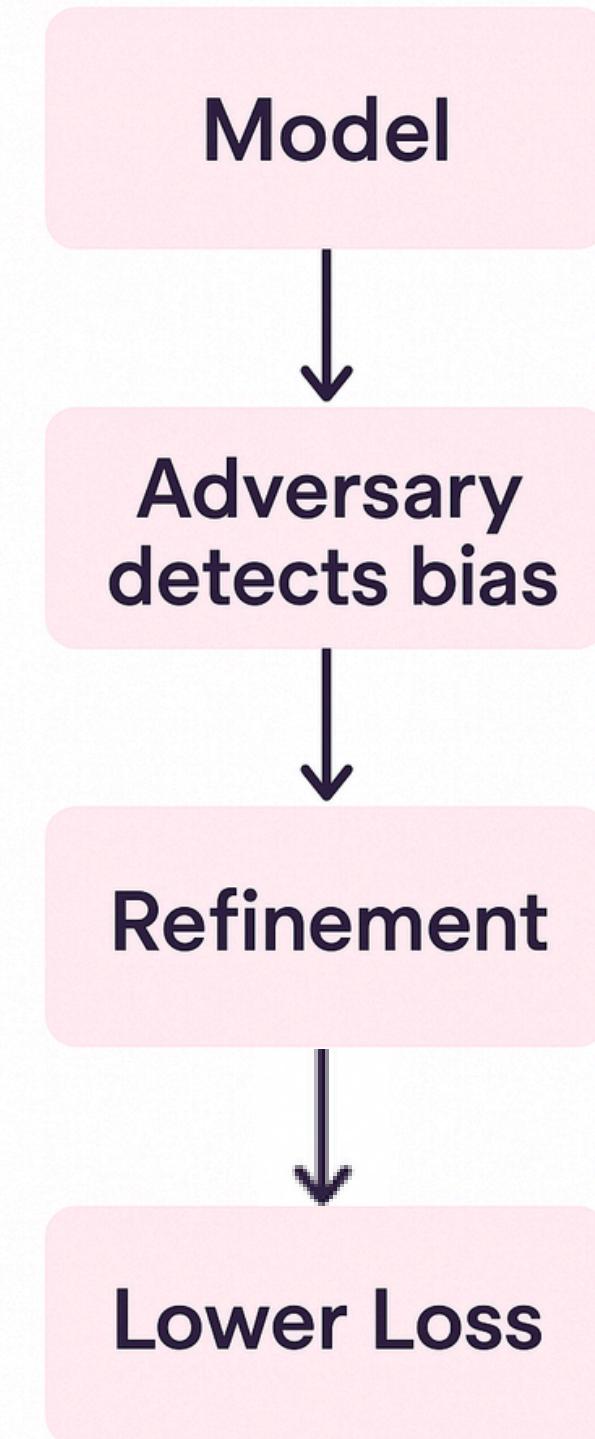
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Adversarial Debiasing

Using an opposing (adversary) model that identifies weaknesses and iteratively forces refinements until loss is minimized

ML Training





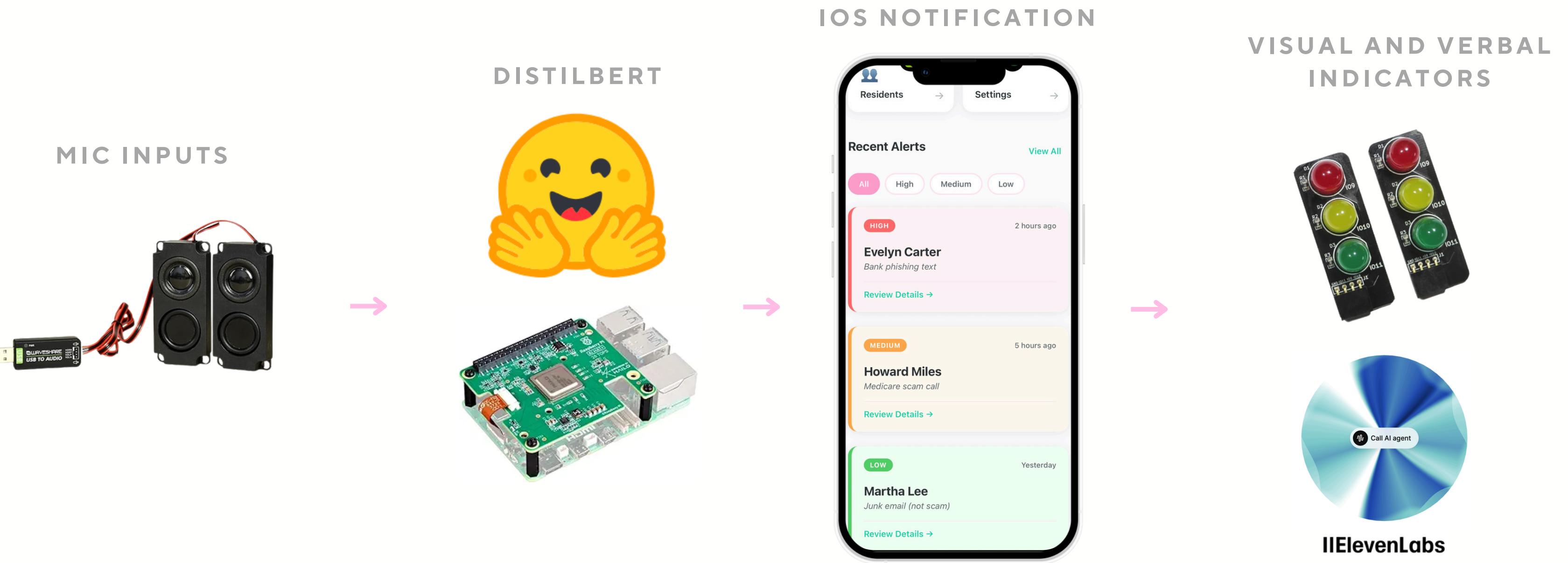
TECH STACK

Supabase

Data Storage and Cloud Compute

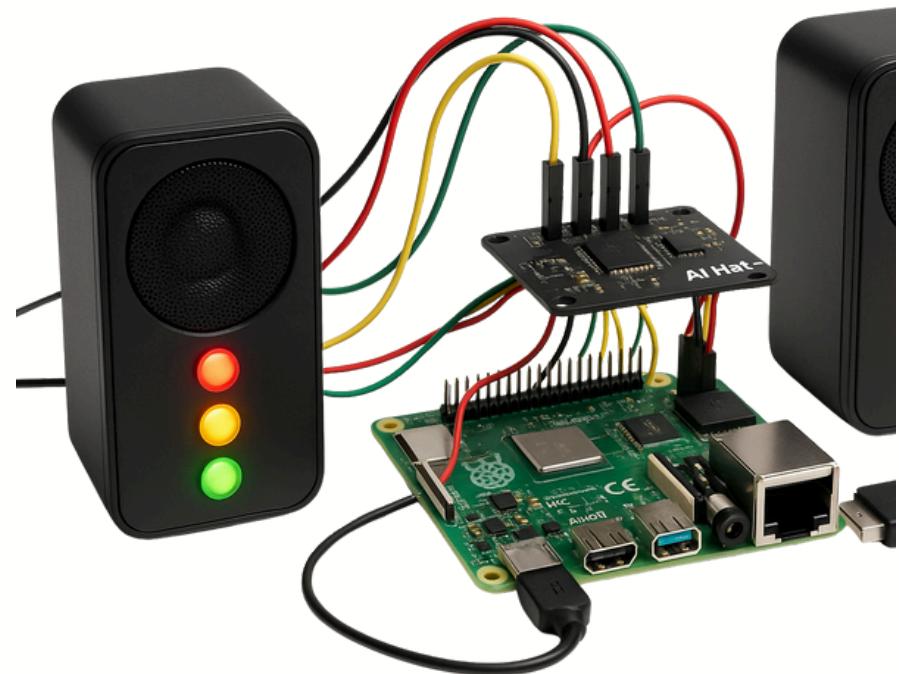


System Architecture



Prototype

Raspberry Pi5



Cost

\$297

Compute

Local

Real Product

Bluetooth Speaker



Cost

\$17

Compute

Cloud

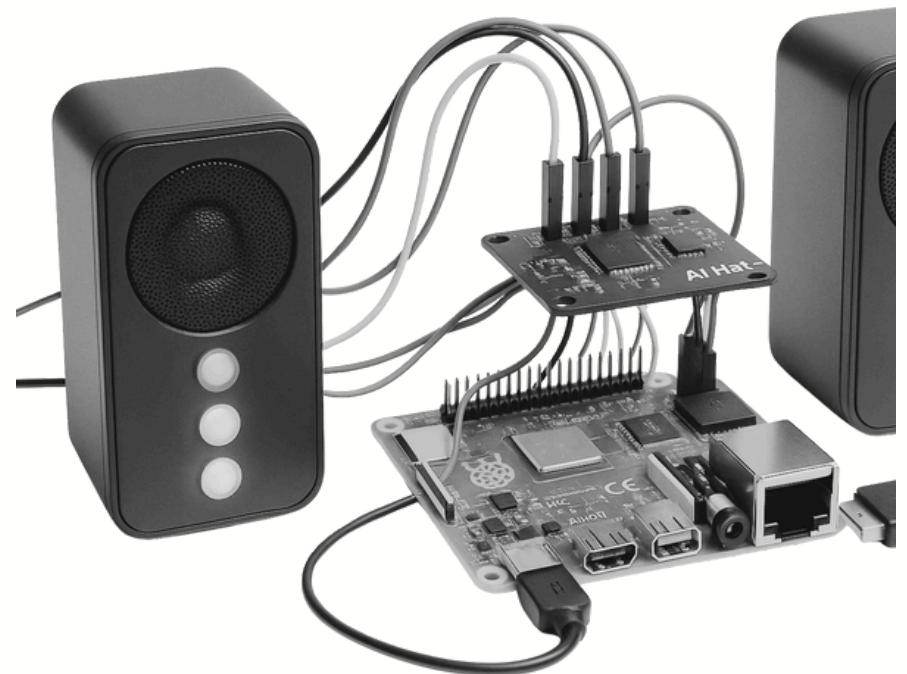
Raspberry Pi prototype built solely for hands-on hardware experience (not intended for industrial use)

Use a Bluetooth speaker with lights while handling all computation on Supabase.



Prototype

Raspberry Pi5



Cost
\$297

Compute
Local

Real Product

Bluetooth Speaker



Cost
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Monetization

Business Model

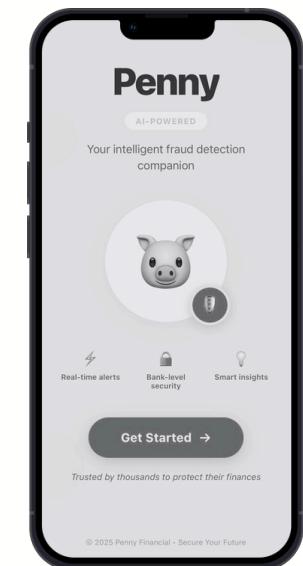


B2B

Provide our services to nursing homes to help them mitigate financial fraud amongst residents



Revenue Model



Software (Monthly) +
Hardware (One-Time)

Each customer generates \$240 in revenue over 2 years: \$40 from one-time hardware and \$200 from subscription, resulting in \$220 profit at ~90% margin.

Monetization

Business Model



B2B

We sell to nursing homes, who enroll their high-risk residents in our fraud-prevention service.

Revenue Model



Software (Monthly) + Hardware (One-Time)

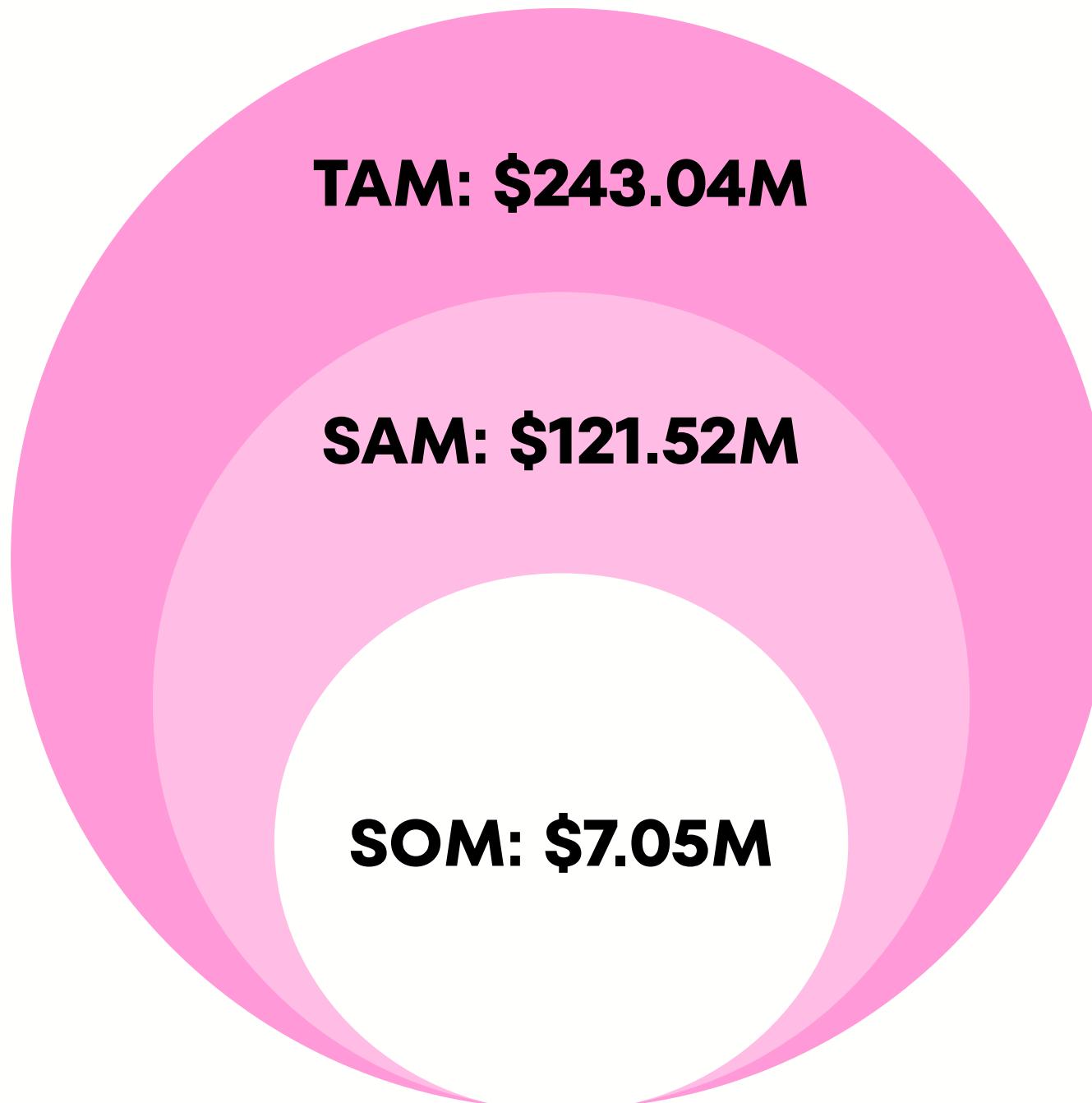
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COMPETITOR ANALYSIS

| Features | Penny | Aura | LifeLock | Call Control | Alexa/Echo Dot |
|---------------------------------------|-------|------|----------|--------------|----------------|
| Real-Time Voice Alerts | ✓ | ✗ | ✗ | ✗ | ✗ |
| Light Indicators for Seniors | ✓ | ✗ | ✗ | ✗ | ✓ |
| Email Scam Classification | ✓ | ✓ | ✓ | ✗ | ✗ |
| Call Scam Classification (real-time) | ✓ | ✗ | ✗ | ✓ | ✗ |
| DistilBERT / ML-based Fraud Detection | ✓ | ✗ | ✗ | ✗ | ✗ |
| Caregiver Alerts (B2B model) | ✓ | ✗ | ✗ | ✗ | ✗ |

Market Size



Total Addressable Market: \$243M
*Assuming national distribution

Global Fraud Prevention Market:
\$33B (2024) → \$90B (2030)*
~18.7% CAGR



Market Validation



Lisa W. Mullen

**Activity Director at Hermitage
Deep Run Senior Assisted Living**

- **Caretakers Should Receive Alerts**

Families want trusted adults, not seniors, to receive scam notifications.

- **iOS App > Desktop**

Caretakers rely on phones for highly interpersonal work; laptops are rarely used.

- **Peak Scam Vulnerability Identified**

Residents are most susceptible around 5–6 PM → supports metadata-powered risk scoring (e.g., call time).



Market Validation



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Go-to-Market Strategy



Controlled Pilot Rollout

Deploy units in partner facilities, monitor interactions for high-signal scam indicators, and adjust model + hardware behavior in real time.



Paid Validation Phase

Expand pilots, integrate caregiver/resident feedback, and refine Penny's detection thresholds using live data.



Market Positioning in B2B

Position Penny as the in-facility anti-scam safeguard, secure contracts with operators/insurers/care networks, and prepare a consumer home-use spin-off channel.



Go-to-Market Strategy



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Go-to-market

Future Directions



● Multilingual Support

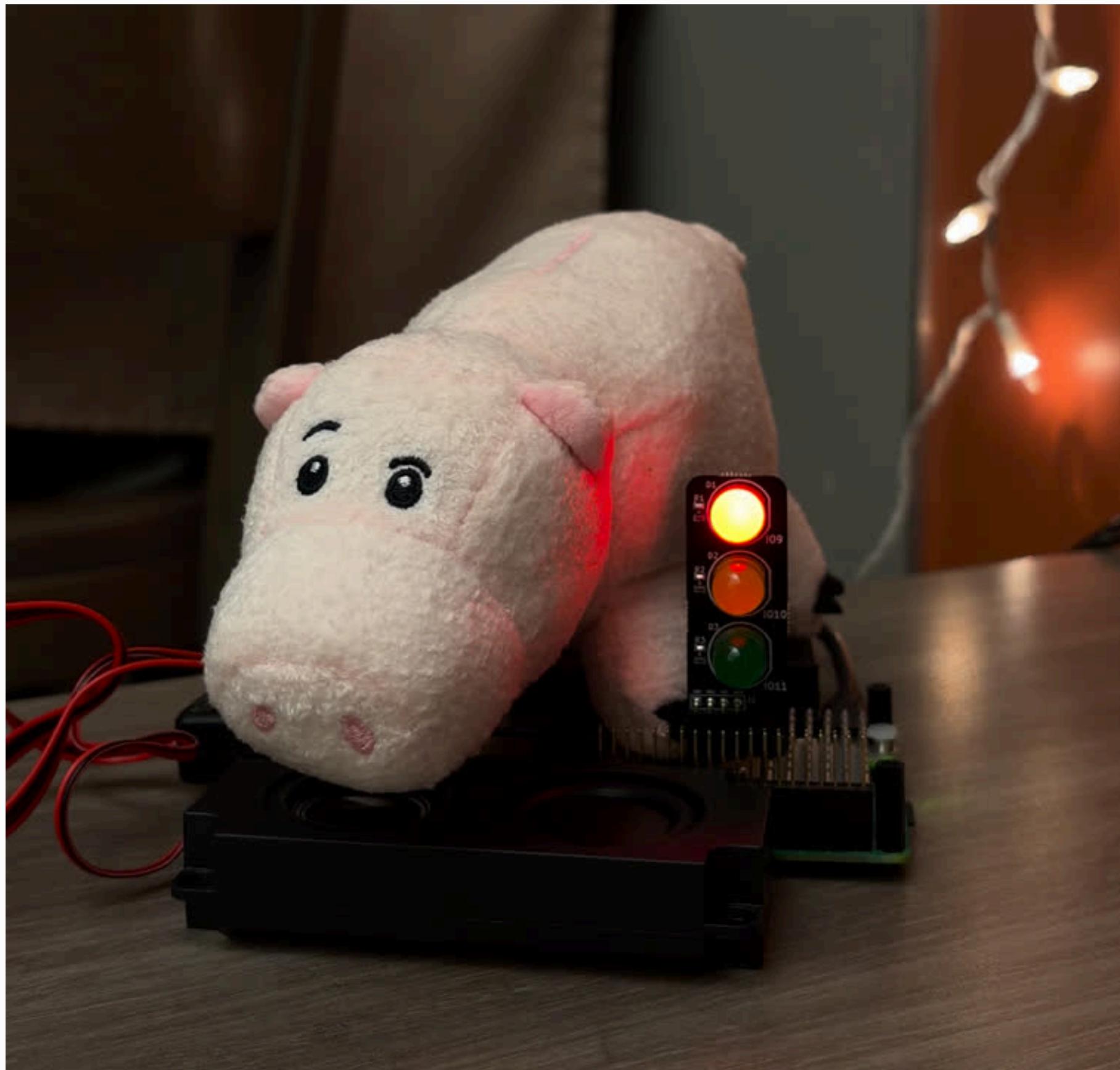
Switch to
[distilbert-base-multilingual-uncased](#)
(trained on 104+ languages). Native-language detection + English alerts for staff.

Family Communication Portal

Families can opt-in to stay updated on their loved ones with scam alerts, weekly safety reports and secure staff messaging.



PENNY DEMO



PENNY DEMO

```
Command Prompt - X + v X
YOU: You've received before? My sister is in the hospital. Can you please send me $3,000 right now so I can help support her?
⚠ PENNY: I hear a red flag there, and I need you to listen very carefully. That is a SCAM. Scammers often pretend to be a family member or a friend in an emergency, asking for money right away. They create a sense of urgency so you don't have time to think or check if it's true. Please, do not send any money. We need to verify this story first.

🔴 SCAM DETECTED – Red light ON
YOU: Hi, Sandra, would you like to go to the mall at 2 p.m today?

⚠ PENNY: ...

🟢 SAFE – Green light ON
^C

🔴 Stopping Penny...
👋 Goodbye! Stay safe!
```





**Because Every Penny
Matters.**

Thank you!