

ARTIFICIAL INTELLIGENCE PERSONALITY IDENTIFICATION



Leveraging Personality Traits for Secure Verification



ONG SHANG KHEAT
skheat3007@gmail.com



HO HONG EN
hoen321@gmail.com



CHUAH PEI WEN
peiwenchuah4321@gmail.com

PROBLEM STATEMENT

What are the problems?

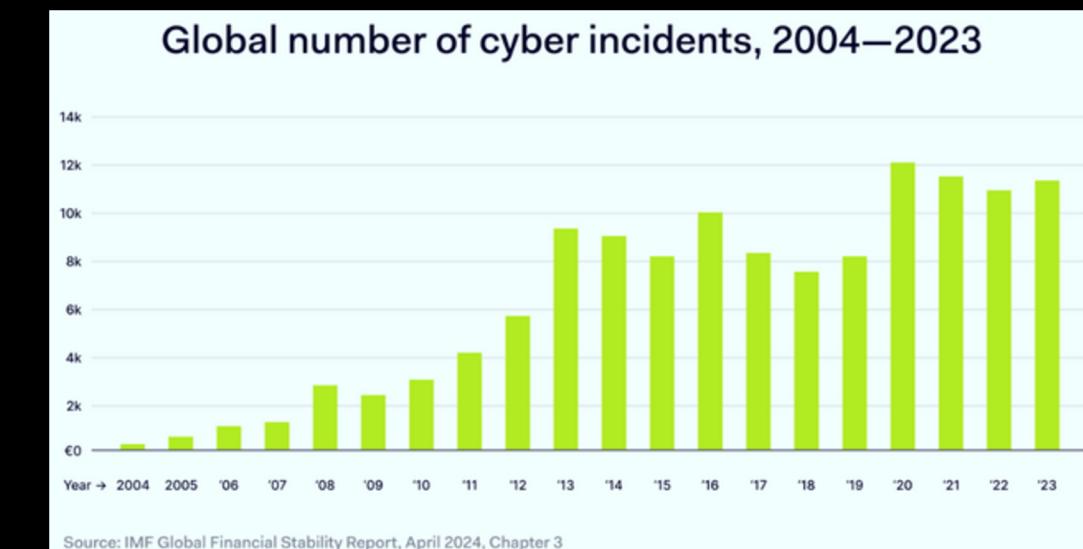
- From 2009 to 2022, the U.S. experienced 5,150 healthcare **data breaches** involving 500 or more records, exposing over 382 million individual records (HIPAA Journal, 2023).
- From 2018 to 2022, financial **data breaches** exposed 153.3 million records (Comparitech, 2022).
- In 2024, the average cost of a data breach is \$4.88 million, reflecting a nearly 26.4% increase from 2020 (Hofmann, 2024).

How does it matter?

- Do you feel **SAFE** with your personal information on the line?
- Are you **CONFIDENT** with the current authentication methods?
- Shouldn't **YOU** be in charge of your **OWN** information's security?

Who is affected?

- Individuals - Exposed sensitive personal data, such as credit card information and medical records, can result in identity theft, fraud, or breaches of privacy.
- Businesses and Organizations - Financial losses can escalate rapidly, including fines, legal expenses, and the challenge of regaining customer trust.
- Healthcare Providers - Healthcare organizations could have sensitive patient information stolen, jeopardizing patient confidentiality
- Governments - When government agencies are targeted, sensitive state secrets or national security data could be compromised.



TARGETED AUDIENCE

Who is most vulnerable to identity theft?

Students

- Usually required to set up multiple network accounts throughout different stages of school
- Lack of awareness on the importance of securing one's information, such as shredding important documents or regularly checking their financial statements
- Becomes easy targets for scams, identity thefts and impersonation

Working Adults

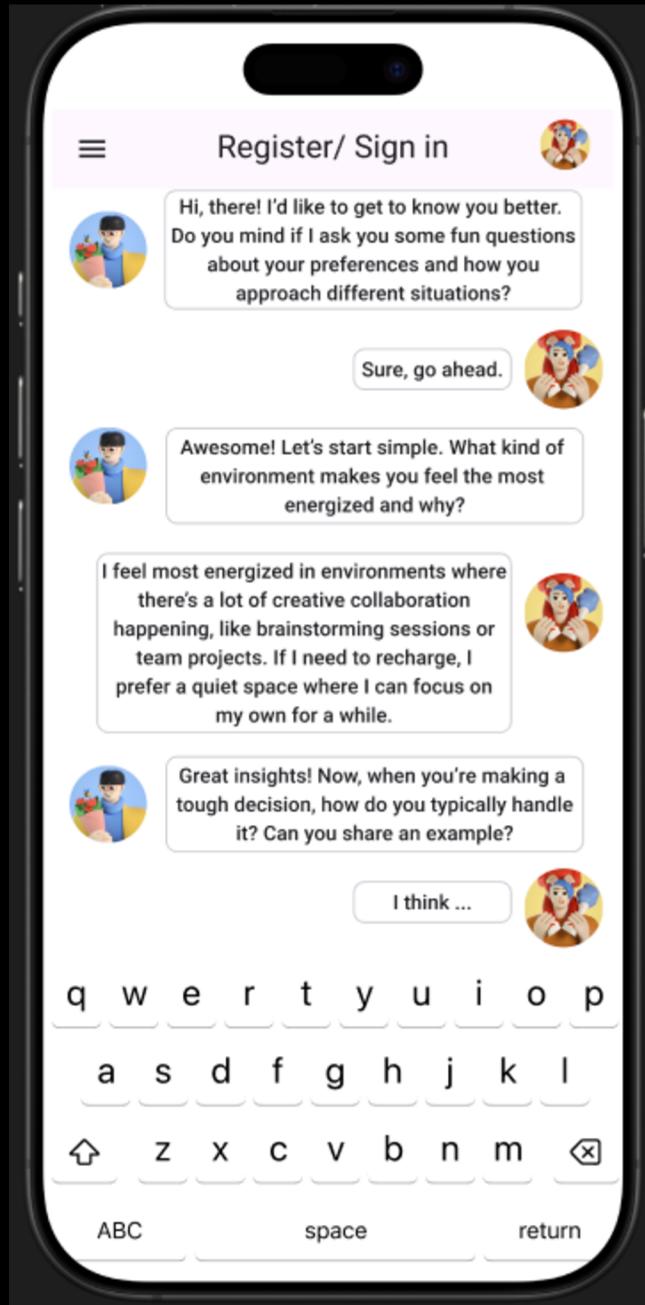
- Often preoccupied with work and busy schedules, induces neglect in personal identity safeguarding
- Forgets password, does not change password regularly, uses one common password for all platforms
- Data breaches at such as through router flooding and credential stuffing can compromise multiple accounts that share the same password

Elderly

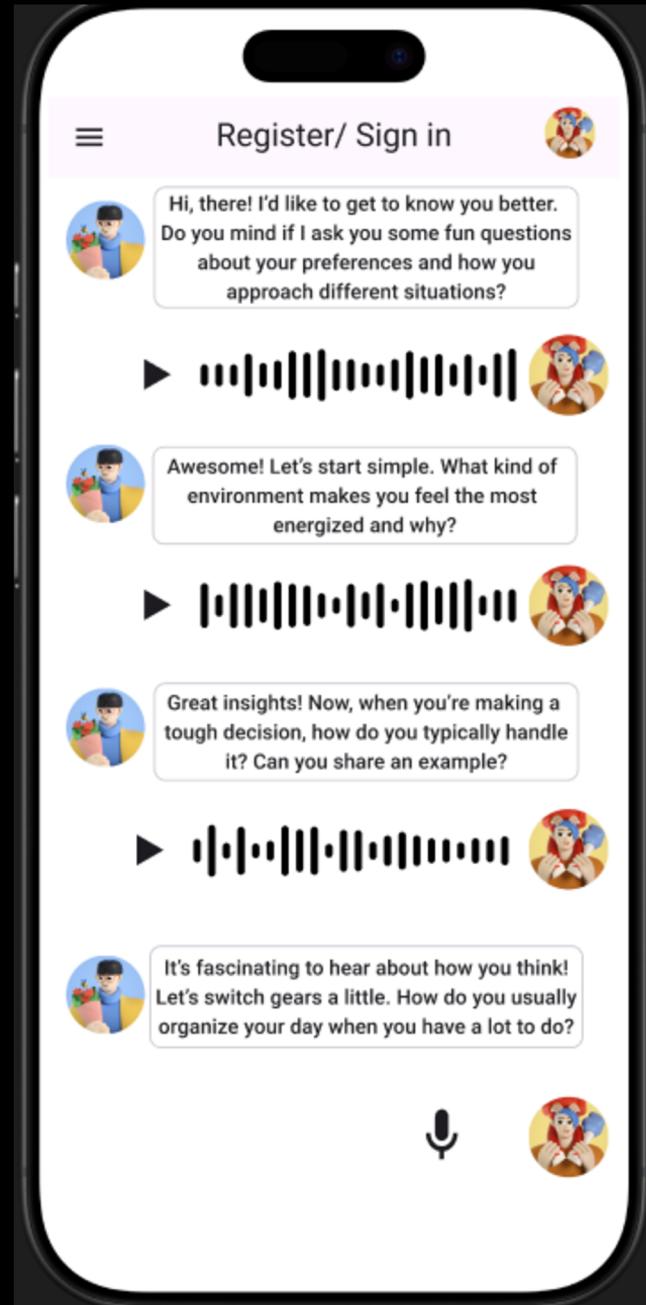
- Lack of digital literacy leading to them being easy prey for scammers by using scare tactics such as posing as IRB agents or bank officers to extract personal information
- Trusting nature and inexperience in using Multi-Factor Authentication, accompanied by frequent use of social media leads to incidents of fake charities, phishing emails and clicking on malware infested links

PRODUCT DEMOSTRATION

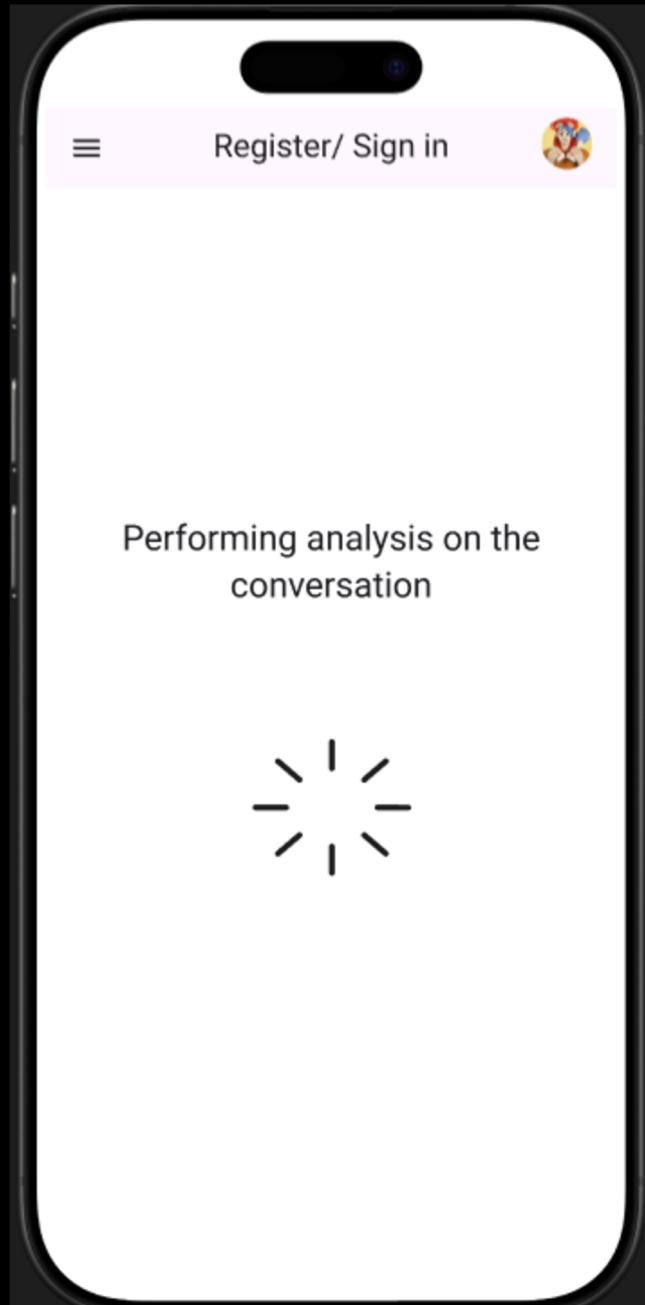
1a



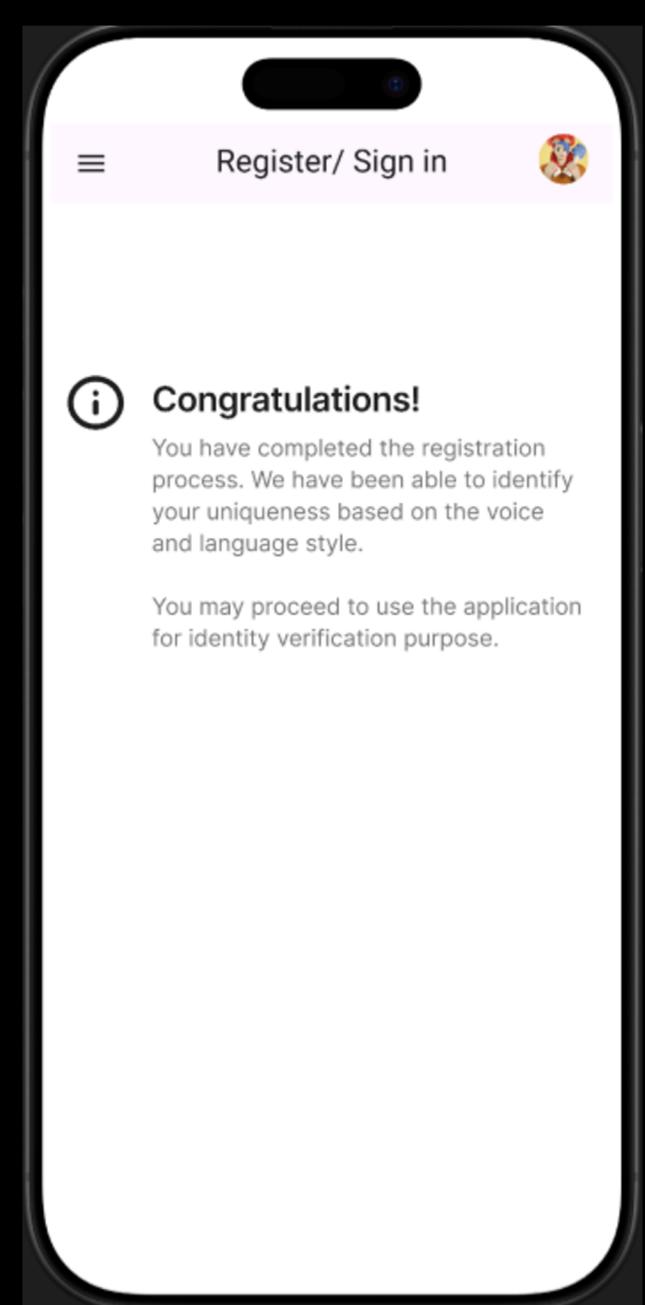
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2



3



Text-based account registration

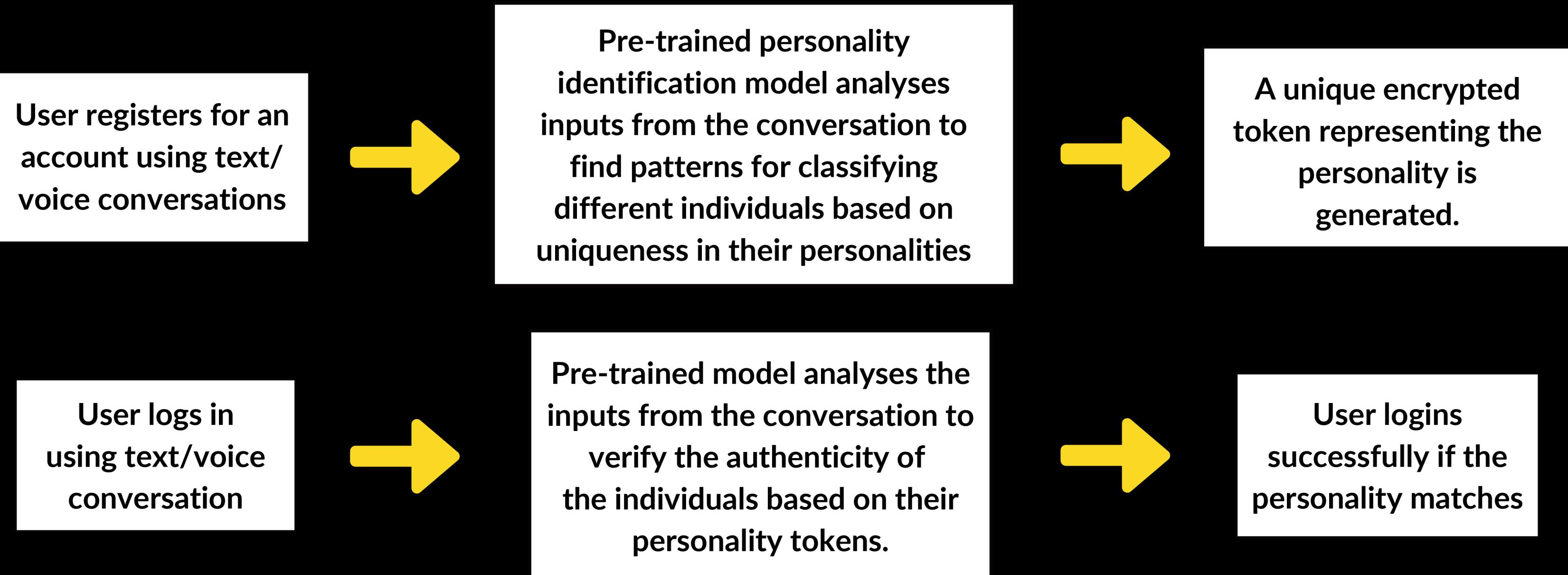
Voice-based account registration

Processing the registration

Registration successfully!

ARTIFICIAL INTELLIGENCE PERSONALITY IDENTIFICATION

SOLUTION OVERVIEW



**ARTIFICIAL
INTELLIGENCE
PERSONALITY
IDENTIFICATION**

SOLUTION OVERVIEW

Aspects to analyse for both voice registration and text registration

SENTENCE STRUCTURE AND STYLE

- Sentence length and complexity
- Paragraph structure
- Grammar and syntax
- Consistent use of tense (past, present, future)

WORD CHOICE AND VOCABULARY

- Lexical choices
- Frequency of specific words

USE OF LANGUAGE FEATURES

- Use of filler words (um, like, well)
- Use of idioms and cliches

DISFLUENCY AND ERROR

- Spelling error
- Grammar error

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SOLUTION OVERVIEW

Additional aspects to analyse for voice registration only

TONE AND PITCH



- Positive/ negative tone
- Formal/ informal tone
- Assertive/ passive tone
- Empathy/ indifference tone
- High/ low pitch
- Pitch variation

SPEECH RATE AND RHYTHM



- Pace of speech
- Rhythm and pauses

ADVANTAGES OF USING AI PERSONALITY IDENTIFICATION

- Acts as an additional layer of protection from traditional verification methods
- Classifies different individuals based on their uniqueness in personality
- Includes text registration on top of voice registration to cope with the inconvenience in speaking due to environmental factors or personal issues

TECHNICAL IMPLEMENTATION

- NLP model trained on personality datasets such as the Big Five Personality Test datasets or where each personality trait corresponds to a certain question and answer set
- Developed as an API to be used alongside existing authentication methods, providing an additional layer of security
- Questions of varying complexity will be presented to the individual during registration and login
- Questions are adaptive and will always be unique and different in wording, structure and occasionally context
- Questions are relevant to the user's background obtained during personal data collection
- Login will be based on vector similarity between registration key and login key, where $\geq 95\%$ similarity will be validated and approved

EXPECTED IMPACT

AI PERSONALITY IDENTIFICATION

- Provides a supplementary dimension of authentication to existing key/password based authentication
- Provides enhanced security, as personality traits such as typing consistency and voice intonation is not easily replicated
- Inclusive customer base, targeting every category of society based on unique personality traits
- Offers an alternative way of security, safeguarding the non-tech savvy from identity forging
- Humanised way of identifying oneself, through method of conversation with AI Bot

OTHER MFA AUTHENTICATION

- Uses existing authentication infrastructure such as combinations of symbols and alphanumeric characters
- Known security vulnerabilities, especially when used without security best practices such as using a common password for multiple platforms
- Not consumer friendly, specifically towards non-tech savvy who might feel intimidated by the vigorous and cryptic authentication process
- Poses challenges to marginalised communities such as the handicapped and illiterate since the conventional password registering process requires user physical input and uses specialised language terms



Artificial Intelligence Personality Identification

THANK YOU

for your time and attention

