A.R.A.I.A

Aphasia Recovery Artificial Intelligence Assistant

MEET OUR TEAM

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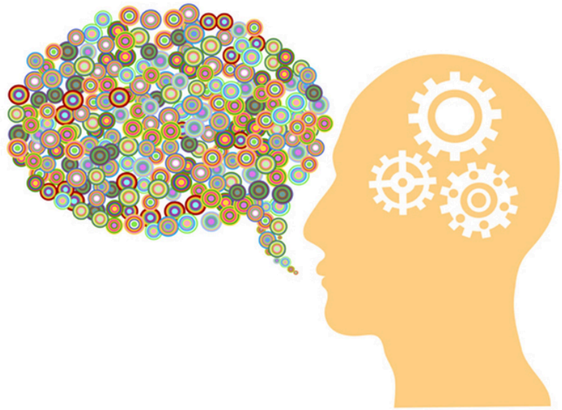
Understanding the Challenge of Aphasia

- Aphasia creates a disconnect between what an individual wants to say, and what they are able to communicate.
- Aphasia has a deeply personal and often invisible impact on individuals.
- While those with the condition usually retain their intelligence and understanding, they struggle with speaking & expressing themselves.
- Many individuals experience isolation, anxiety, and a sense of being misunderstood.



"I know what I want to say, but the words just won't come. It's like being trapped in your own mind."

— Sarah, stroke survivor, 6 months post-onset

Every word matters, but not everyone can find them.

Aphasia by the Numbers: Statistics and Effects

1 The Scale of the Problem

- 2.5 million Americans are currently living with aphasia.
- 180,000 new cases arise annually in the U.S. from stroke alone.

2 The Human & Social Impact

- 70% report experiencing severe depression and anxiety post-diagnosis .
- 60% are unable to return to their jobs within one year of onset.

3 Barriers to Quality Care

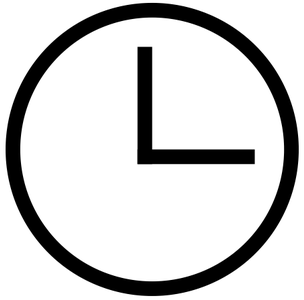
- Only 38% of patients receive what is considered adequate speech therapy.
- Patients in rural areas often travel 2+ hours to access specialized treatment.

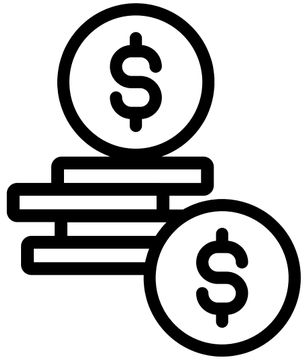
4 The Financial Burden

- With traditional therapy sessions costing $200-$300+, families can spend over $25,000 annually out-of-pocket on combined therapy, care, and related costs

The Critical Need

An aphasia patient with a speech impairment needs a way to access frequent therapy sessions with speech and conversation exercises in a private, safe environment[2], but they may be unable to access adequate in-person care due to factors such as **prohibitive financial costs**[1], **geographical location**[6], and **systemic shortfalls in healthcare delivery**[4].





Current solutions are not efficient

1

Lingraphica

- A $5000+ device that requires special hardware
- Limited portability
- Follows a steep learning curve

2

Constant Therapy

- Can cost upwards of $249 annually
- Offers limited variety in exercises
- Has poor accessibility features
- Not personalized & very generic

3

Tactus therapy

- A $200+ service that is fragmented across 10+ apps
- These do not include any unified form of progress tracking (and are expensive when combined)
- There is no AI adaptation

4

Traditional Therapy

- Costs $200-300 per session
- Limited number of sessions per week
- Geographic barriers
- Available depending on insurance

OUR SOLUTION:

A.R.A.I.A

Aphasia Recovery Artificial Intelligence Assistant

Our Mission

At A.R.A.I.A., we aim to increase accessibility to adequate speech therapy for aphasia patients along their journeys to recovery.

Who We Are

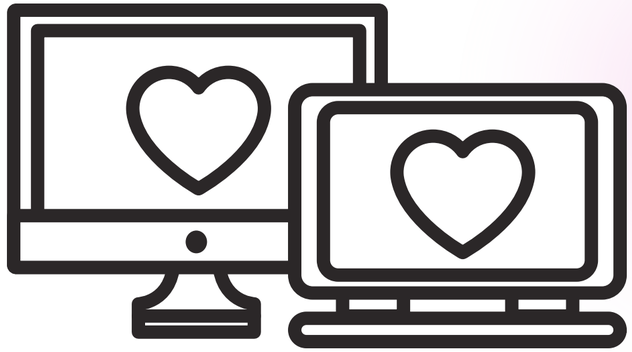
A.R.A.I.A. is an AI-powered speech therapy application that provides conversation and articulation resources to rehabilitate aphasia patients suffering from speech impairments.

Why Digital Speech Therapy?

01

Market Gap

- Effective recovery requires **20-50 hours total therapy**
- However, many providers only have 1-2 hrs/week available



02

Traditional Speech Therapy Limits

- 700,000+ Annual Stroke Survivors | $34.5B Speech Therapy Market
- **Access can be limited** by cost (avg $249/hour), geography, or mobility challenges
- **COST COMPARISON:**
  - Traditional therapy: $249/year
  - ARAIA virtual therapy: Free for patients

03

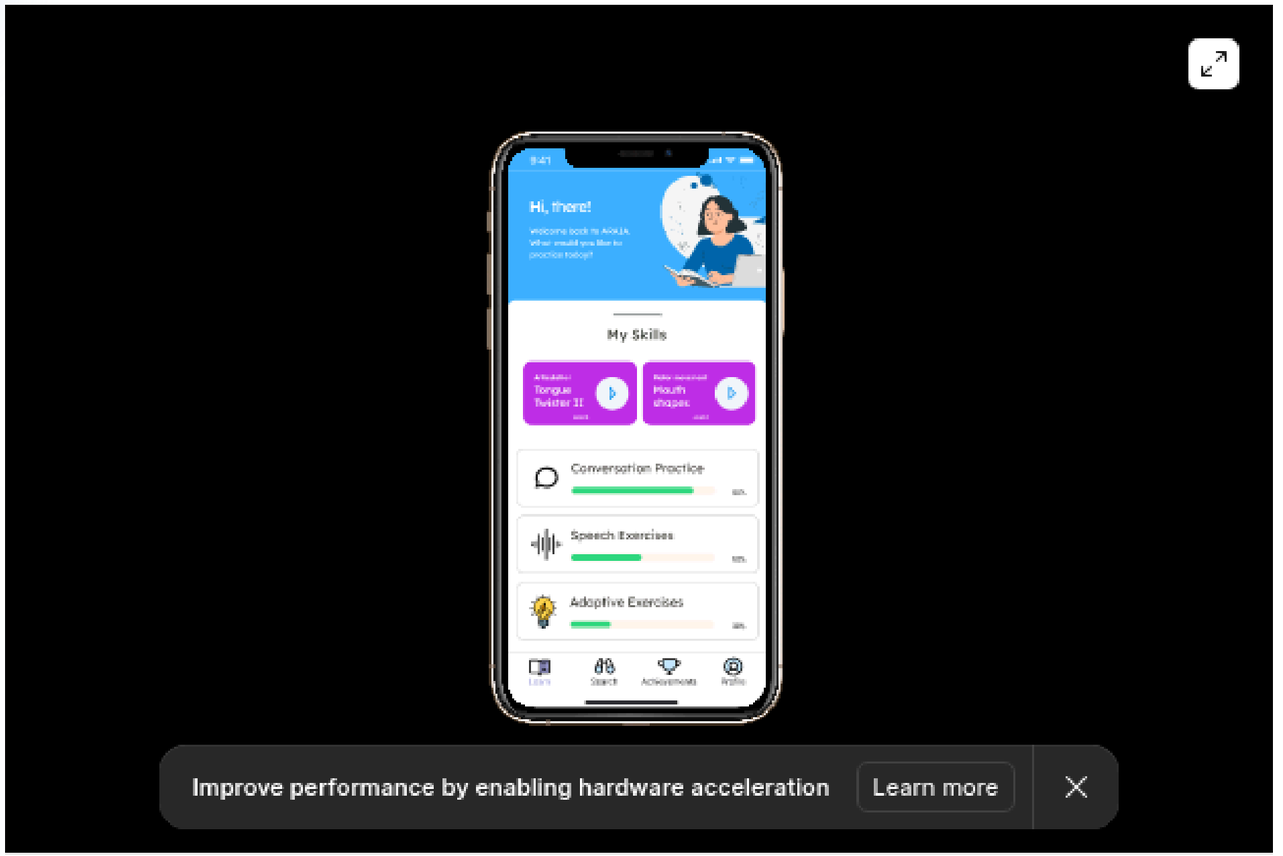
Advantages of technology

- Technology, especially mobile applications, offers a powerful way to deliver **high-frequency, adaptive therapy**
- Big CACTUS trial (N=278) shows digital therapy achieves significant word retrieval improvements

Click me!

PROTOTYPE

DEMO



A.R.A.I.A

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User demographics

A.R.A.I.A.'s target market consists of users who are:

- Aphasia patients of any type with a speech impairment (and no difficulties with comprehension)
- At a known stage in their recovery process
- Likely 15+
- Suffer from aphasia (Broca's, Global, or Wernicke's aphasia) as a result of a traumatic brain injury, seizure, or stroke.

Logistics

Simple setup process designed for patients, therapists, and caregivers to start therapy within minutes.

01

Prerequisites

- Therapist assessment of aphasia severity/stage required
- Supports Broca's, Global, and Wernicke's aphasia
- Initial speech baseline needed

02

Setup Process

- Download free app (iOS/Android)
- 5-10 minute profile setup
- Calibrate speech recognition

03

Data collected

- Demographics & medical history
- Current medications & therapy background
- All data encrypted & HIPAA-compliant

04

For Therapists

- Real-time progress monitoring
- Assign & customize exercises
- Adjust difficulty remotely
- Receive automated summaries

05

Requirements

- Smartphone/tablet with microphone
- Internet connection
- ~500MB storage for offline exercises

06

Automated Reports

- Weekly progress reports
- Daily alerts
- Secure PDF via email/in-app

07

Getting Help

- In-app support chat
- Video tutorials included
- Therapist messaging system

A.R.A.I.A. Features

Performance Monitoring

Real-time insights on session accuracy, fluency improvement, and practice habits.

Engagement

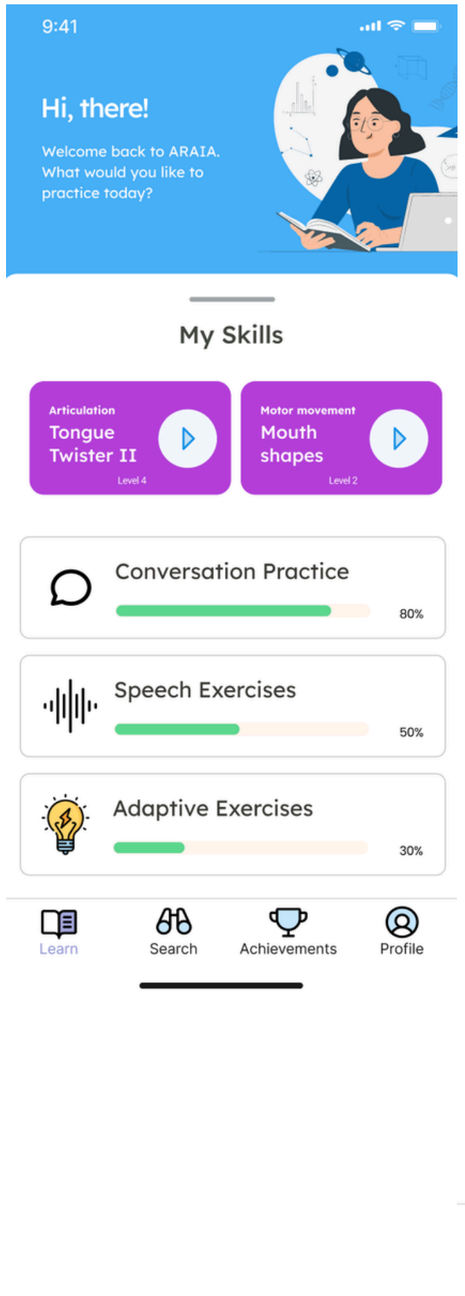
Activities are designed to be engaging to encourage continued practice.

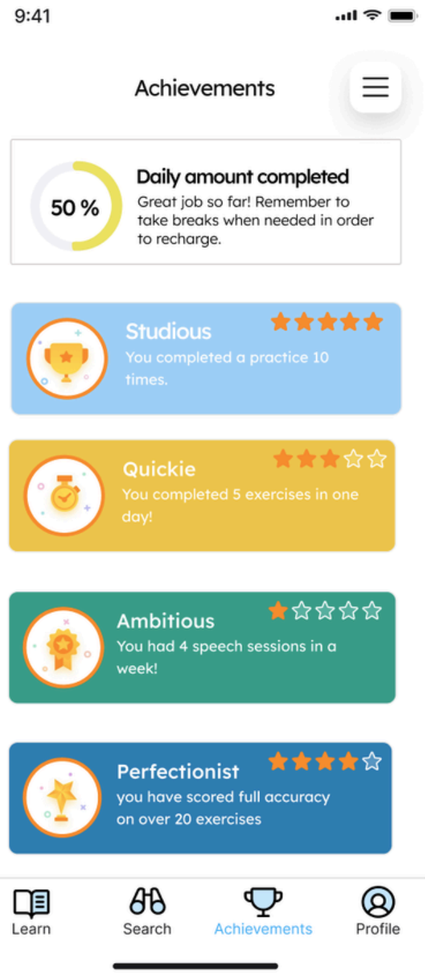
Accessibility

One-handed and voice navigation, auditory description, adjustable display, simple UI.

Motivation

Achievement badges and uplifting messages for milestones.





A.R.A.I.A. Features

Alerts

Get notified when new daily exercises, goals, or caregiver messages are available.

Dashboard

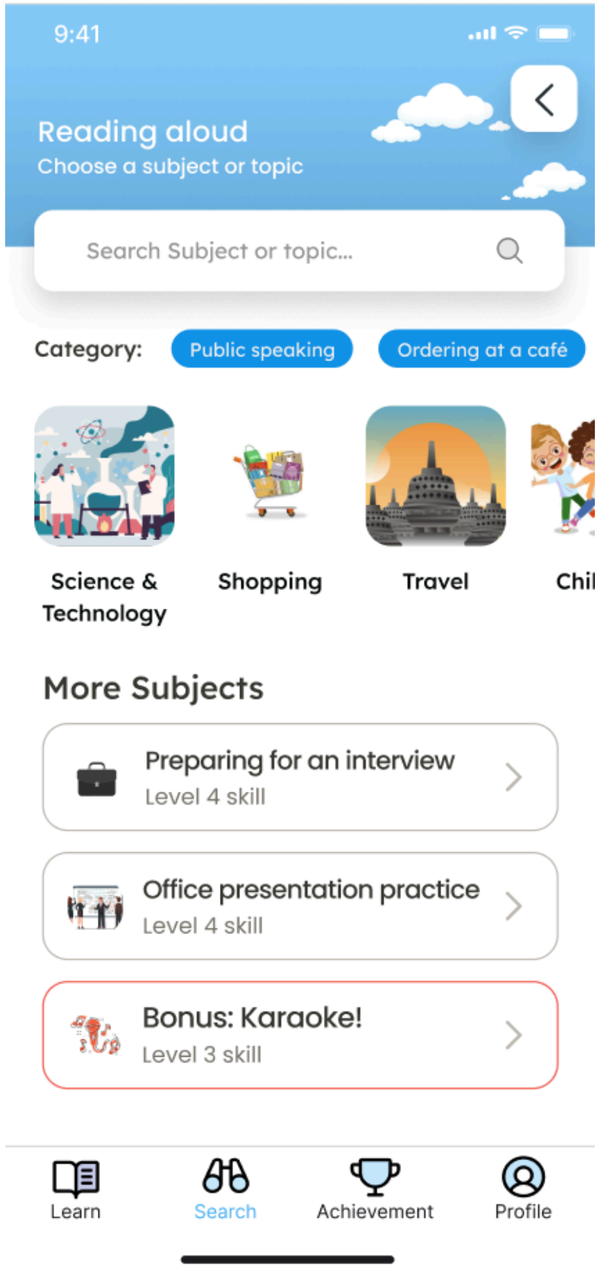
See visual progress, track daily streaks, and access recent achievements.

Personalized Therapy

Personalized, evidence-based daily exercises with progress tracking and a custom content library

Communication

AI-powered conversation practice with scenario-based simulations to help ease the patient back into their former routine.



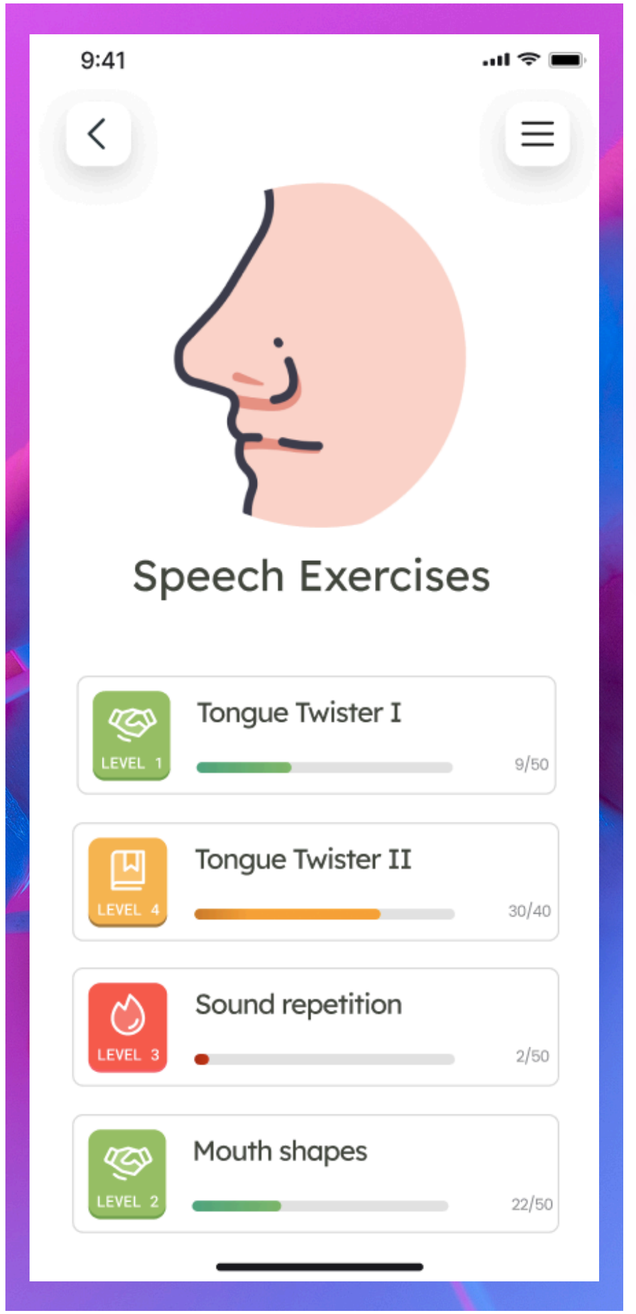
AI-Recommended Lessons

Goal:

Based on assessment data, an ML model will choose suitable exercises for users

Exercise Generation:

1. **Train** ML model on a large dataset of pre-existing patient data and the traditional therapy exercises they use
2. **Predict** suitable exercises from new patient data
3. Periodic user assessments to measure growth, feed data into model, and **update** next set of exercises



Speech Recognition Technology

Role in Exercises

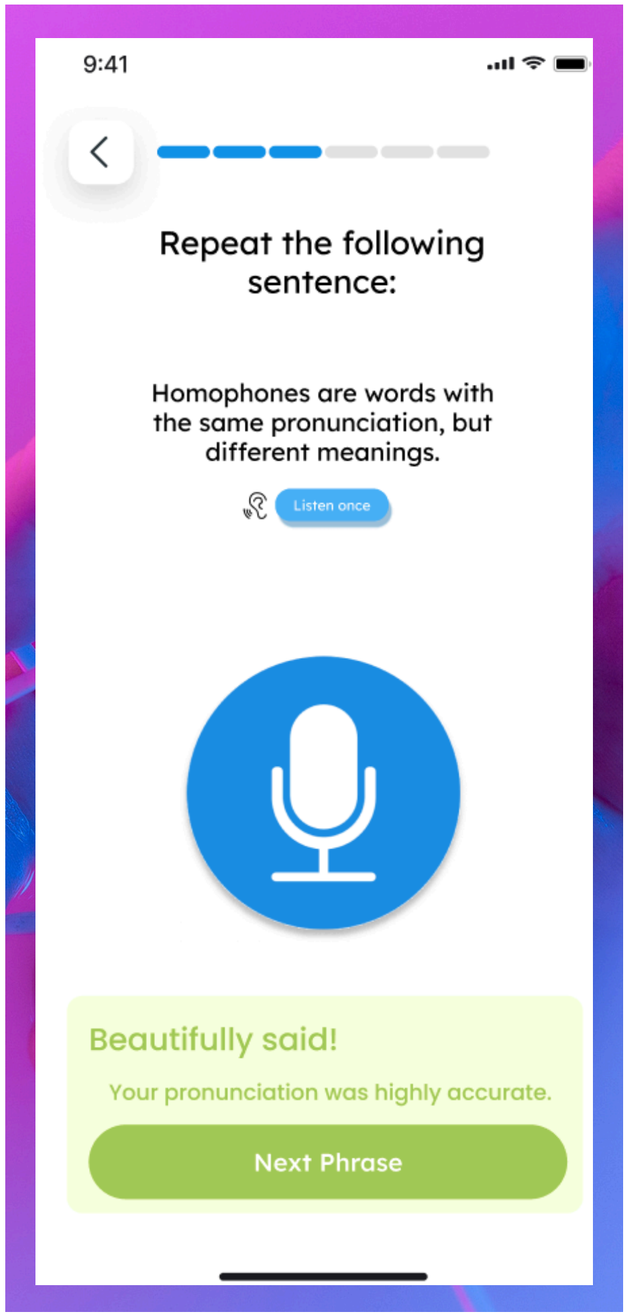
- Assesses language in speaking exercises
  - Detect if the patient said a word or phrase correctly
  - Analyze pronunciation, fluency, or errors.

How it Works

- Speech-to-text technology: Converts spoken language into analyzable text data
  - E.g. Duolingo, Recurrent Neural Networks
- Recognizes speech pattern anomalies using ML

ARAIA Voice Navigation

- NLP to understand commands, LLMs for text responses, and then text-to-speech features



Security and Privacy

User Profile:

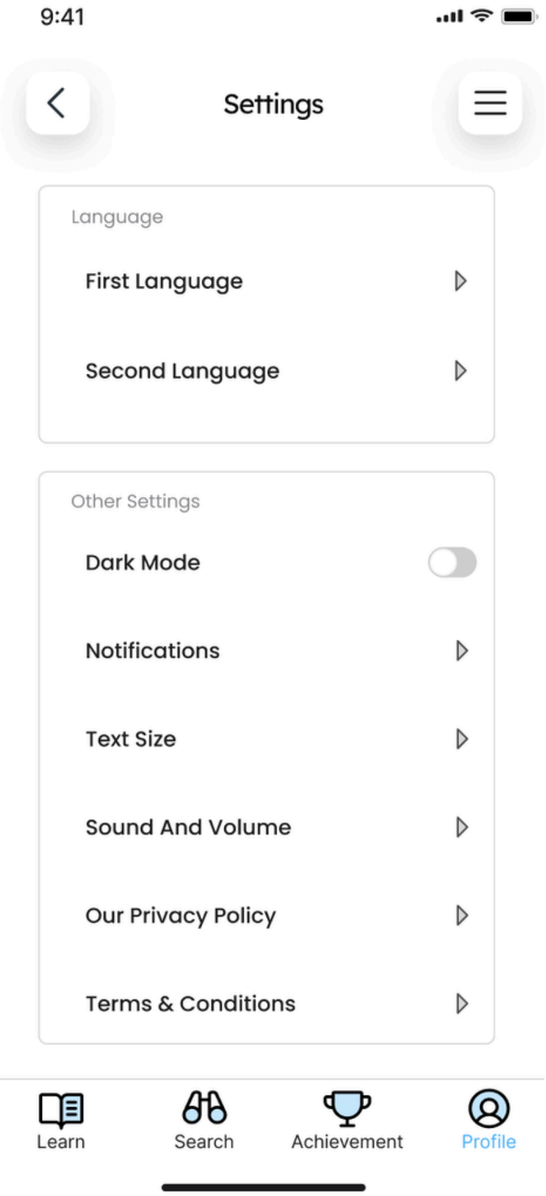
- All personal and health information will be stored securely.

Therapist Access (**roll-out)**:

- Clear options for sharing or restricting access to caregivers and clinicians (Medical proprietary software)
- Communication between therapist and patient is secured within the app

Collecting Speech Data to Improve App

- Will only collect and analyze data from those who give permission.
- Data will be aggregated, never tied to individuals.
    - No uniquely identifying info will be stored



Limitations

- **Training accuracy**
  - Current AI capabilities
- **Speech recognition accuracy**
  - Technology available
- **Need diverse dataset to train AI model**
  - AI is prone to language bias
- **The first edition of A.R.A.I.A. will be limited to English speakers.**
- **Requires a device**

Next Steps

Train AI model

- Gather usable large dataset to train ML model
  - Work with online databases, clinics
  - Minimize bias in AI

App Improvement

- Pilot testing and feedback from real users
- Speech recognition exercises availability in multiple languages

Approval for Clinical Usage

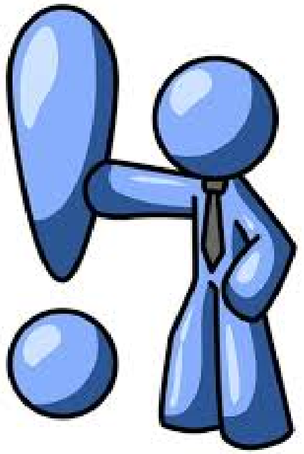
- Consult licensed therapists, linguistic experts, neurologists, and psychologists
  - Clinical trials and usage in par with doctors

Get Funds

- Free app, but still need funding to employ people to cover maintenance
  - Grants, donations, etc.

Conclusion

By building on research-backed speech therapy techniques and digital learning science, A.R.A.I.A. delivers a holistic, engaging, and adaptive therapy experience for aphasia survivors.



01

The app integrates

Daily oral-motor and articulation practice, real-time feedback, and cognitive games.

02

The app enhances

Recovery with script and conversation training, musical intonation, reading/writing, and multimodal support.

03

Modules leverage

Gamification and mastery-based progress.

04

Comprehensive approach

Empowers users to recover at their own pace, building confidence, independence, and a renewed sense of self.

05

Vision

No stroke survivor faces recovery alone

06

Impact

700,000+ potential users each year in the U.S. alone

07

Innovation

First platform to fully integrate AI, accessibility, and clinical expertise

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THANK YOU

Questions?