



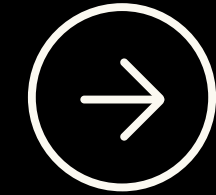
“The Patriots” Senior Project Group

# STREAMLANG

Product Deck

Adaptive Listening for Language  
Mastery

# AGENDA



- 1 Introduction
- 2 Problem Statement
- 3 Our Innovative Solutions
- 4 Our Architecture
- 5 Competitors
- 6 Key Competitive Advantages

# MEET THE TEAM



MEHMET EMİN  
AVŞAR



UYGAR  
BİLGİN



RUŞEN ALİ  
YILMAZ



CAN TÜCER



GÖKTUĞ OZAN  
DEMİRTAŞ

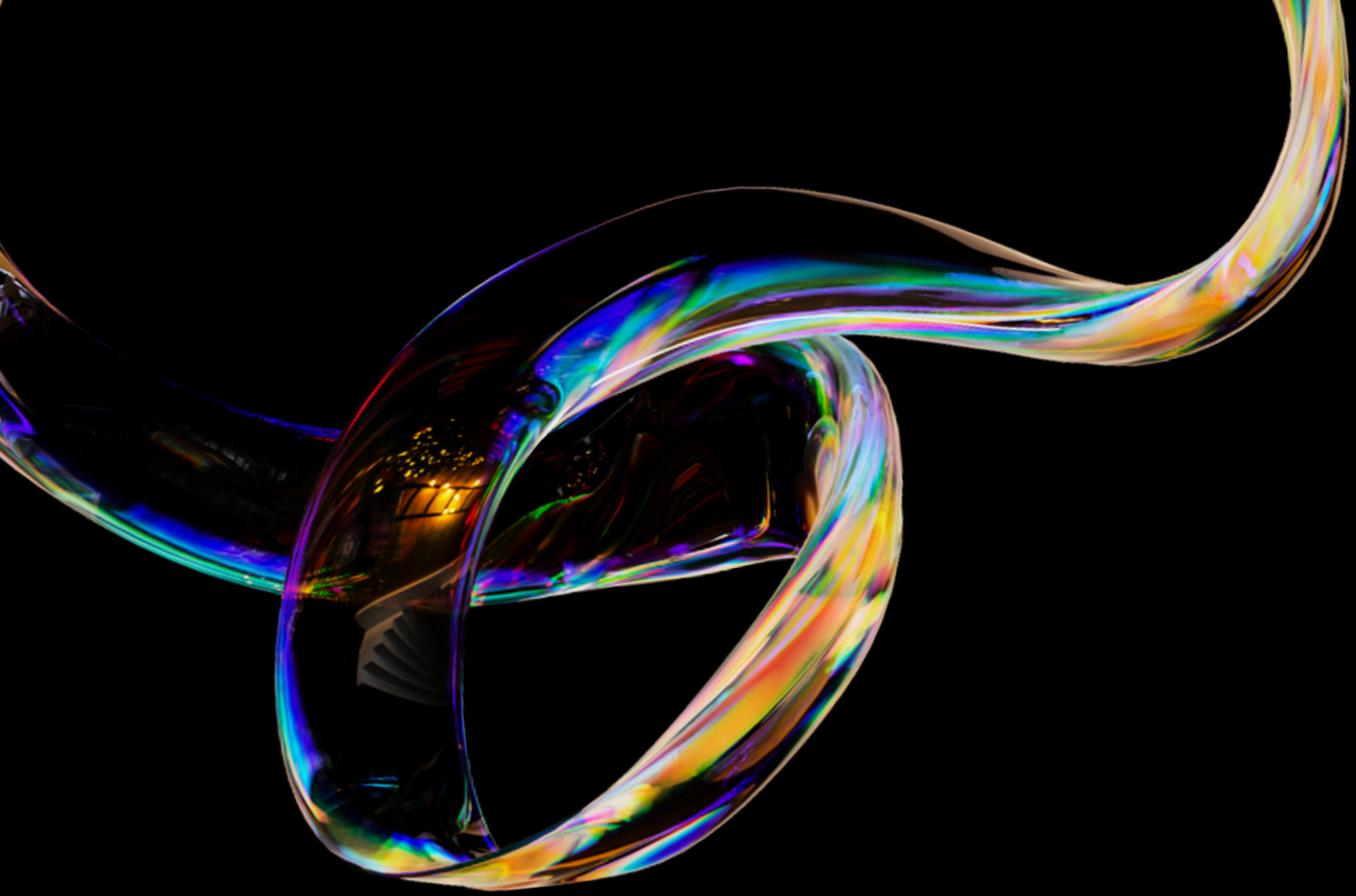


# INTRODUCTION

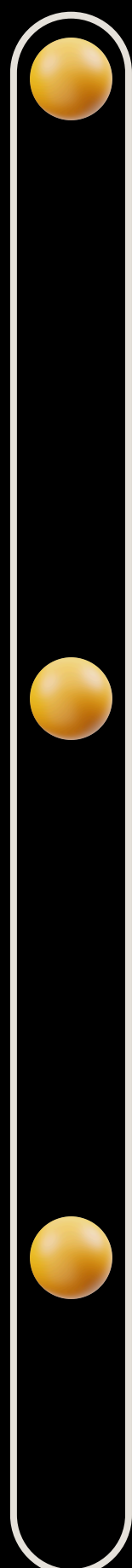
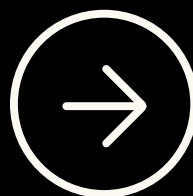
We are a group of incredibly competent 5 CS seniors who have diverse backgrounds spanning from AI research to fullstack engineering to systems administration. We honed our skills working in real life for top-notch companies; we successfully developed impressive past projects together, and individually. We have long been synergistically working together and are confident in our undertakings.

For our senior project, we are going to develop StreamLang: An Adaptive Language Listening Platform. With our application, language learners of all levels will be able to configure and listen to a stream tailored for their development; they will be able to pick the specific vocabulary used, the grammar structures to reinforce, the speed of speech, and the topic.





# PROBLEM STATEMENT



## Difficulty of Finding Listening Content

Language learners often find it hard to come across content suiting their level. If they find some content where they understand the vocabulary, the grammar might be too simple for their growth. If they find a stream that contains the grammar they want to study, the vocabulary might be too unfamiliar. If both are perfect, the topic might be uninteresting.

## Constantly Having to Discover Higher Levels of Content

Even if you find the perfect listening stream, you will outgrow it after a while. This means that the whole process of seeking suitable listening content will start from the beginning, again and again.

## Inconvenience of Other Study Methods

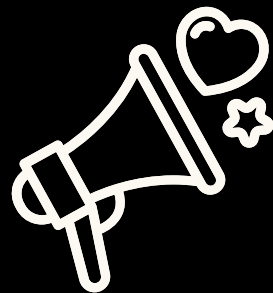
If you study grammar or vocabulary by writing it down, or reading from a book; you will need to be in a proper environment with a desk and plenty of space.

# OUR INNOVATIVE SOLUTION



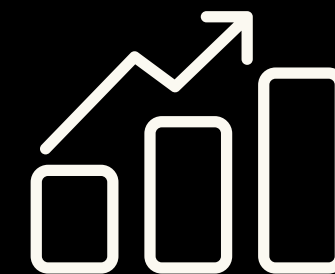
## Create a Highly Configurable Listening Stream

Users will be able to upload a specific vocabulary set, or pick a deck from Anki\*, select specific grammar structures they want included such as Past Perfect Tense, select content type such as Story, Article, or Independent Sentences, whether they want to hear translations to their native language, their preferred voice and speed, deeper configurations about how the grammar structures will be spersed and so on.



## Adapt Based on User Growth

Still, having to configure all of that may fatigue the user. There will be tens of templates available capturing most of the user's needs, while still giving them the flexibility to change what they want. Furthermore, Dynamic Mode will intermittently assess the user's level with questions and keep track of their exposure to specific vocabulary and grammar structures; thereby it will update the listening stream configuration based on the user's level.



## Reduce the Friction of Language Studying

With Deep Anki Integration, the user will be able to sperse the vocabulary they study on the desk in their listening stream. A portion of their grammar study will also be migrated to listening. This way, the time that they have to spend in front of the desk will be reduced; they'll just click "Play" on an app while walking, driving, in a crowded subway, or anywhere.

\*Anki is a very popular flashcard app (generally) used for vocabulary learning

# OUR ARCHITECTURE

## CONTENT SCRAPING ENGINE

- We will automatically scrape and classify copyright-free content based on the grammar structure.
- We will heavily index the scraped content for fast retrieval.
- We will (most probably) use PostgreSQL for its performant indexing and full-text search features.
- We will have a [Preprocessing Engine](#) to label the grammar / tone of scraped content.

## GENERATION MODULE

- We will use LLMs to generate specific user requested content.
- Our [feasibility tests](#) have discovered that Claude is able to generate near 100 unique sentences matching the prompt from only 5 super rare words.
- We will apply sophisticated LLM orchestration techniques where each generated sentence will go through a QA agent to see if they comply with the requirements / make logical & grammatical sense.

- We will heavily cache every generation and use scraped content first because (1) this will reduce fallback to AI generation, (2) content taken from real-contexts tend to be higher quality for language learning.

- We will use [Chatterbox](#), an open source TTS engine with amazing performance and a tiny model size.
- AI generation is expensive and expected to take place only in case of cache miss; therefore, the Generation Module will run on a serverless architecture like Google Cloud which bills per compute seconds. The rest will be on a dedicated server.

With experience and more research, our architecture will evolve and flourish into a more detailed implementation.



# COMPETITORS

## Taalhammer

- AI-powered spaced repetition that tracks your memory and adjusts review timing for each sentence based on performance
- Complete playback control: loop, slow down, and replay sentences unlimited times with full offline functionality
- Sentence-based learning that focuses on producing full sentences rather than isolated vocabulary words
- Custom content creation allowing users to build their own listening drills from personally relevant material
- Listening-to-speaking integration that trains both comprehension and active production in one continuous cycle

## Languia

- AI-generated personalized stories automatically created based on your level, interests, and vocabulary you're learning
- Comprehensible input approach using natural language acquisition through reading and listening to authentic content
- Context-based spaced repetition that reviews vocabulary within new story contexts rather than isolated flashcards
- 24/7 AI tutor for grammar explanations, conversation practice, and writing feedback without anxiety
- Content import and adaptation to simplify web articles, YouTube transcripts, and books to match your level

## Beelinguapp

- Parallel text display showing target and native language side-by-side with synchronized native speaker audio
- Leveled content library with stories and news for all proficiency levels across 23 languages
- Native speaker narration providing authentic pronunciation and immersive listening experience
- Comprehension assessment through end-of-story quizzes and progress tracking for vocabulary mastery
- Diverse content types including novels, current news, and music lyrics for varied learning contexts

# KEY COMPETITIVE ADVANTAGES

## Grammar Centric Configuration

Users can select specific grammar structures and choose between Drill mode (cycling through structures in every sentence) or Roaming mode (interspersed throughout), a feature no competitor offers.

## Dynamic Adaptive Mode

Continuous assessment through sporadic questioning and speech analysis that automatically adjusts vocabulary level, grammar complexity, and content difficulty without user intervention—going beyond competitors' static personalization.



## Deep Anki Integration

Bidirectional sync that updates card statuses based on listening exposure or question performance, and automatically creates new cards from frequently encountered words—unique in the market.

## Intelligent Question Generation System

Configurable comprehension, vocabulary, and sentence construction questions at customizable frequencies turn passive listening into active learning with measurable assessment.



StreamLang

# THANK YOU

for your time and attention

If you have any questions or doubts, we would be happy to answer through email or even hop on a Zoom call or meet in real life to discuss the product further.

