Company Profile

VOICEWISE

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UNIVERSITÀ DEGLI STUDI DI ROMA

About the Company

- Voicewise was born in 2019 as a university startup with the joint efforts of the University of Rome Tor Vergata and Cloudwise S.r.l.
- The aim was to combine cutting-edge research in the field of voice analysis/AI to industry-grade digital solutions

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Our Mission and Vision

Mission

Deploy real-time voice analysis solutions for the identification of altered states, with accessible Apps.

Vision

Democratize voice analysis for remote healthcare and logistics

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Management Team

We built a multidisciplinary team of world-class experts in Data Science, IT, medicine and engineering

Simone Fiore Miraglia

Chief Executive Officer

Valerio Cesarini

Chief Technical Officer

Fabio Pellini

Chief Information Officer

Giuseppe Azzali

Sales Manager

Maria Tavasci

Business Development

Prof.
Antonio Pisani

Medical Director

Prof.
Giovanni Costantini

Scientific Director

Prof.
Giovanni Saggio

Head of Science

Technical Team

Who we are and who we will be: the team helping build our solutions

Valerio Cesarini

Chief Technical Officer

Fabio Pellini

Chief Information Officer

MLOps

DevOps

Dev Project Manager

UI/UX Designer

Marketing & Communication

Business Development

Voice is the new Blood

Our approach on extracting useful information from the most complex vector of the human body and automating medical-grade or self assessments

- Voice production is the most complex human task, involving many systems (pulmonary, cardiovascular, phonatory, neurologic)
- Voice is the **only human vector that remains unaltered in the digital world**
- Processing optimized for **smartphone** recordings for maximum ease of use
- Custom **signal processing + AI** allow us to extract relevant markers of a condition and identify or monitor it

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Our Technology

We specialize in the whole pipeline.
From audio recording to AI inference

DATA COLLECTION

- Thorough medical, acoustic and logistic protocols
- Privacy and anonimity guaranteed
- Trained personnel using isolated vocal booths for acoustics
- Recording and processing optimized for smartphone

SIGNAL PROCESSING

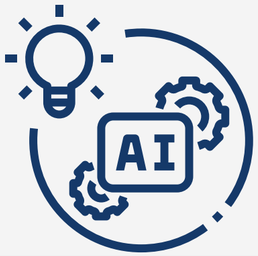
- Custom procedures for improving acoustic quality and prepare for biomarker extraction
- Segmentation
- Noise reduction
- Volume and dynamic control
- Custom augmentation

FEATURE EXTRACTION

- More than 6000 features extracted from all the useful voice domains
- From classical to experimental signal processing pipelines (frequency, Cepstrum, entropy, glottal models)

FEATURE SELECTION

- Custom AI+statistic algorithms
- Identify the best subset of biomarkers for the chosen problem



AI/ML TRAINING

- Train ensembles of custom algorithms
- Classical ML
- Deep Learning

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Product Overview

Voice analysis enables the detection or monitoring of a huge variety of conditions, with different depths, scopes and resulting business models.

Voice4Health

Comprehensive voice-based telemedicine platform for doctors and patients

YourMood

Fast, multi-emotion sentiment analysis

VoxEtil

Voice-based alcohol intoxication detector

Voicenter

Voice quality and therapy software for clinicians

Voice4Health

Business Model:

B2B SaaS / PaaS

App + web portal

Typical Customer:

Hospitals, Clinics, Pharma

- Users can access Voicewise's technology with a touch using a mobile app (**iOS/Android** and Web)
- Record predefined vocal tasks and receive a real-time output
- Supported scopes (June 2024): **Parkinson's** Disease, **COVID-19**
- User profiles: **Doctors** can manage many patients and their history, **Patients** can self-assess, **Recording Engineers** can gather data
- Third-party integration possible with APIs

Image is demonstrative and may not reflect the finished product, where more effort will be put into UI.

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YourMood

Business Model:

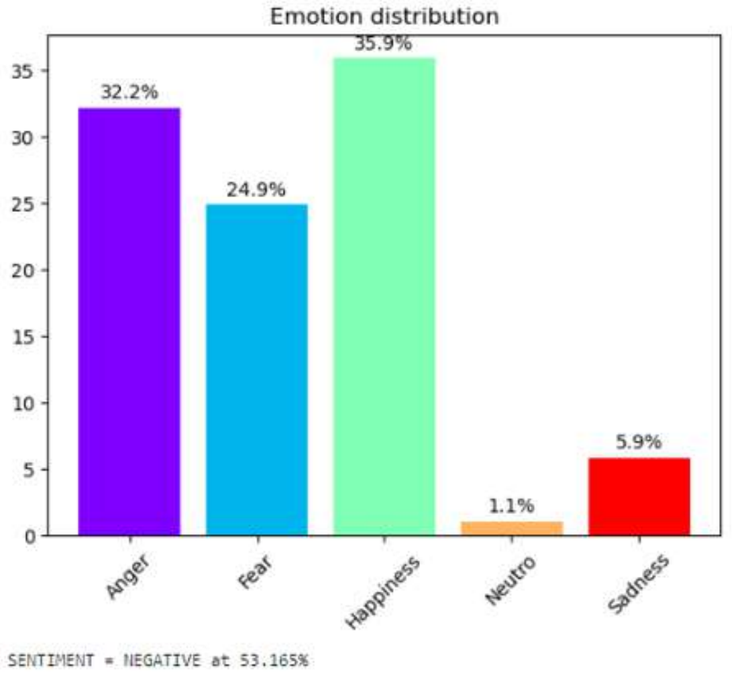
B2C SaaS

App (iOS & Android)

Typical Customer:

Private users, Marketing

- From freely recorded snippets of **speech**, YourMood is able to infer the emotional state of an individual
- It analyzes the **tone of voice** and can be independent from semantics
- Output is an estimate of the emotional content in terms of anger, fear, happiness, sadness and neutral
- A Sentiment value is also generated for sentiment analysis



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VoxEtil

Business Model:

B2B SaaS

API

Typical Customer:

Automotive

- Identification of **alcohol inebriation** from voice
- Users utter predefined sentences (e.g., count from 1 to 10) and a flag for the **crossing of the legal threshold** is computed (0.05% BAC) as well as an estimate of the BAC.
- Optimized for MEM microphones: can be **seamlessly integrated in apps or in smart cars** for preventive screening
- Includes voice-based **Identity Verification**

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Voicenter

Business Model:

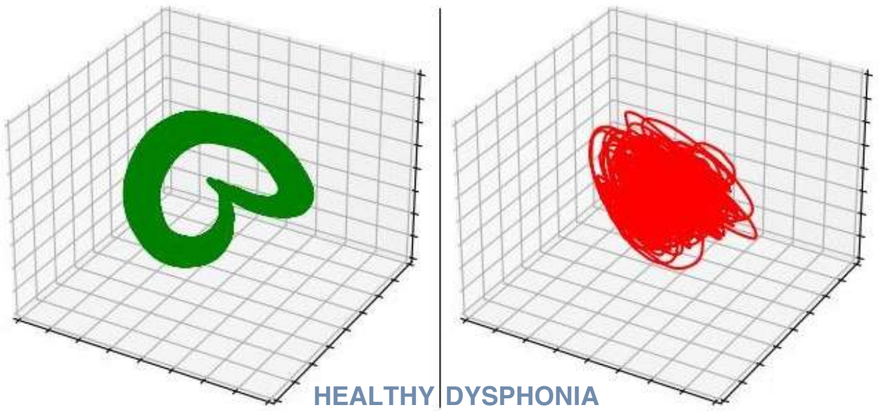
B2B SaaS

Software + app

Typical Customer:

Speech Therapist, Laryngologist, Voice specialist

- **Healthcare professionals** in voice and speech conditions **require software** for voice recording, feature extraction, patient monitoring
- Current solutions are outdated, incomplete and hard to get and use
- Voicenter offers the most comprehensive set of biomarkers needed from speech therapists, **enhanced by custom graphics and AI**
- All of the newest and most valuable **acoustic features/biomarkers** are extracted by Voicenter for the clinicians to analyze
- **AI analysis** gives estimates on voice quality, aids in diagnosis and biomarker selection for specific diseases
- Clinicians can easily access the **history** of patients and recordings
- Custom graphical solutions allow for a fast, at-a-glance assessment and include: voice quality diagrams, radar plots vs. healthy, fundamental frequency plots, etc.



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Technical Overview

How can a small company build and manage 4 products?

Same basic infrastructure

- A main **infrastructure** is being developed for Voice4Health and will serve as the **base for all other services -> VW Base platform**
- Cloud-based, single-tenant API service that is scalable and secure
- Connected to a backend running our custom signal processing and AI inference services on secure cloud servers
- Custom front-end instances (apps, web) will be built for each different product

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Technical Milestones

2025 Q1

Voice4Health App
Complete and ready-to-market with COVID and Parkinson modules

2025 Q2

End of VoxEtil POC with Audi

YourMood App
In all app stores, built with VW base infrastructure

2025 Q3

End of the Multicentric Parkinson trial: collect the biggest Parkinson voice dataset in the world

VoxEtil models, App and API ready for integration in third party

2026

Voicenter ready for beta testing - launch in Q2

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Future Applications

Infant Cry - detect the needs of a child from their cry, flag for emergencies, automatically detect crucial moments

Dog Bark - detect basic emotions and needs from dog sounds (hungry, angry, sad)

Diabetes - detect anomalies in people with diabetes, infer glucose levels from vocal changes

Add more diseases for Voice4Health: BPCO, cardiovascular, dysphonia, neurodegenerative

What is needed?

Data Collection

- **Protocol :** Voicewise writes their own technical, medical and bureaucratic protocols internally
- **Sessions and recruiting** : structures and partners should be found and gathered in order to collect the right amount of data
- **Time :** Data collection sessions are not immediate and it usually takes ***months*** to build a reliable dataset
- **Size :** we strive to build the biggest datasets for best generalization -> ***thousands*** of voices

Development

- **Effort :** technicians and hardware to be paid, sessions to be funded, clinics and partners to be rewarded
- **Algorithm :** Voicewise builds their own custom algorithms fine-tuned for the use case
- **Service (API/App) :** build a new instance of the Voicewise base platform, develop a suitable UI/UX
- **Launch and sponsor**

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