CryLab

General FAQ

What is CryLab?

CryLab is a cry analysis platform that allows you to incorporate and easily analyze cries as part of your neurological or respiratory focused clinical studies. It includes a smartphone application for data acquisition & cry recordings, and a software for study management, data analysis & exportation. It is intended for research purposes only; it does not provide any medical diagnostics or information.

Who is Ubenwa Health?

We're a Montreal-based start-up analyzing newborns cry sounds for health and other insights. We've been researching newborn's cries for over 4 years now, with our expertise in audio signal analysis and machine learning, we've created an algorithm to detect neonatal encephalopathy secondary to a hypoxic insult (or HIE) with 92.5% accuracy using only a newborn's cry sounds. We've also created a free app for parents called Nanni AI, which acts as a cry translator for babies' needs (hunger, pain, discomfort, etc.), as well as an infant care routine tracker.

What is the value of these acoustic biomarkers?

Cries are coordinated by the central nervous system (CNS) of newborns and infants, controlling the muscles of the head and neck, the respiratory system, and the production of tears. Thus, any disruption in the functioning of the CNS can cause changes in the patterns of their cries, such as pitch. Similarly, respiratory issues can also affect certain markers within the cry, such as dysphonation, or the "raspy" sound of a cry.

We've curated biomarkers related to various infant health conditions from the literature and our own research. For our research, you can find information in the Publications section of our Research page on our website. Alternatively, Lawford et al. (2021) wrote a systematic review and meta-analysis on the subject of acoustic biomarkers and neurological injuries. We also recommend articles by Chittora & Patil (2016) and Kheddache & Tadj (2015) for providing biomarker information based on various health conditions of the infant.

What patient population can this be used for?

We recommend its primary use be for neonates (patients up to 30 days of age). However, it can also be used in infants up to 3 months of age and beyond, though we strongly recommend taking age into account when comparing data from different age groups.

Presence of different modes in the spectrogram of a cry from a variety of pathologies

Pathology	Cry mode									
	Flat	Rising	Falling	DHB	Glottal roll	Weak vibration	Hyper phonation	Inspiratory phonation	Dysphonation	Vibrations
Normal	P	P	P	P	P	N	N	N	N	P
Neonatal	P	P	P	P	N	N	N	P	N	P
Laryngomalacia	N	P	P	N	N	N	N	P	P	N
Asthma	P	P	P	P	N	N	N	P	N	N
Heart disease	N	P	P	N	P	N	N	N	P	N
Down syndrome	P	N	N	N	N	N	N	N	N	N
Malnutrition	P	P	P	N	N	N	N	P	N	N
HIE	P	P	P	P	N	N	N	P	N	N
Hydrocephalus	P	P	P	P	P	N	N	N	N	N
Meningitis	P	P	P	N	P	N	N	P	P	P
RDS	P	P	N	P	N	N	P	P	N	N
Deaf	N	P	P	N	N	P	N	N	P	N
Asphyxia	N	P	P	N	P	N	N	N	N	N
Brain hemorrhage	P	N	N	P	N	N	N	N	P	N

Legend: P = present, N = absent, HIE = hypoxic ischemic encephalopathy, RDS = respiratory distress syndrome, DHB = double harmonic break. Table from *Chittora, A., Patil, H.A. Spectral analysis of infant cries and adult speech. Int J Speech Technol 19, 841–856 (2016).*

Security

Where is my data stored?

Your data is securely stored on Google Cloud Platform (GCP), benefiting from its advanced encryption and robust physical security measures.

Is my data safe?

Absolutely. We are HIPAA and PIPEDA compliant. All data is anonymized and encrypted both at rest and in transit, ensuring comprehensive protection against unauthorized access.

Will my data be sold?

No, Ubenwa does not sell its data to third parties.

Will my data be used by Ubenwa? If so, how?

Ubenwa may use your data to train existing models or to create new models. This may be for internal research purposes or for commercialization.

Do I need to sign a contract?

Yes, you will need to sign to confirm your agreement to the terms of use and privacy policy.

Any other questions?
Email our clinical team
samantha@ubenwa.ai
shrieda@ubenwa.ai

Operations

How much will it cost?

Pricing models will depend on the number of patients and number of recordings that will be taken. As such, the pricing model depends on the research study itself. Our support team will be happy to meet with you to understand your needs and provide a quote.

How do I use it?

Step 1: Login to the CryLab webpage using your administrator account that we've provided to you.
Step 2: Set up your data groupings and add your additional users as needed.
Step 3: Install the App on the smartphone(s) that will be recording cries.
Step 4: Login to the app (administrator or other users) to see your data groupings and recording options.
Step 5: Create patients and record a cry and annotate it using the app. Alternatively, you can create and edit patients, and upload previously recorded cries directly into the software.
Step 6: View the biomarker extraction in the software for each recording.
Step 7: Export the data into a .csv file for further analysis and statistics.

How long do the recordings need to be?

Technically, recordings do not need to be of a specific length. So long as there is at least one cry unit (one voiced expiration, or one "wahhh"), you will have a result for one cry unit. In our studies, we used a recommended recording length of at least 30 seconds, but you are free to set your own recording length by time or by cry units. For performance considerations, the maximum duration of the recording should not exceed 10 minutes, recording sessions longer than this shall be split.

Do I need a specific device/microphone?

You do not need a specific device or microphone to use CryLab. However, we do recommend using the same device or microphone for all recordings in the study to prevent any unintended differences in recordings due to device changes.

Can I get help with analysis / building AI models?

We can help you with that too! We're happy to book a free initial consultation call with you to learn more about your needs and see how we can help you with your analysis or AI needs.

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