NIH RePORTER Announcement:

A "No Cost Extension" indicator is now available on RePORTER! The indicator appears in the "Other Information" section on the "Project Details" page.

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Project Details

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Bridge2AI: Voice as a Biomarker of Health - Building an ethically sourced, bioaccoustic database to understand disease like never before

Project Number	Contact PI/Project Leader	Awardee Organization
3OT2OD032720-01S3	BENSOUSSAN, YAEL EMILIE Other PIs	

Description

Abstract Text

Our group aims to integrate the use of voice as biomarker of health in clinical care by generating a substantial multi-institutional, ethically sourced, and diverse voice database linked to multimodal health biomarkers to fuel voice AI research and build predictive models to assist in screening, diagnosis, and treatment of a broad range of diseases. Data collection will be made possible by software through a smartphone application linked to electronic health records (EHR) and other health

biomarkers such as radiomics, and genomics, and supported by federated learning technology to protect data privacy. Based on the existing literature and ongoing research in different fields of voice research, our group has identified 5 disease categories for which voice changes have been associated to specific diseases and around which we aim to center the data acquisition efforts: 1. Vocal Pathologies (Laryngeal cancers, Vocal fold paralysis, Benign laryngeal lesions) 2. Neurological and Neurodegenerative Disorders (Alzheimer's, Parkinson's, Stroke, ALS) 3. Mood and Psychiatric Disorders (Depression, Schizophrenia, Bipolar Disorders) 4. Respiratory disorders (Pneumonia, COPD, Heart Failure, OSA) 5. Pediatric diseases (Autism, Speech Delay) Specific Aim #1: Data Acquisition Module: - To build a multi-modal, multi-institutional, large scale, diverse and ethically sourced human voice database linked to other biomarkers of health that is AI/ML friendly to fuel voice AI research Specific Aim #2: Standard Module: - To introduce the field of acoustic biomarkers by developing new standards of acoustic and voice data collection and analysis for voice AI research. Specific Aim #3: Tool Development and optimization - To develop a software and cloud infrastructure for automated voice data collection through a smartphone application that allows non-invasive, user-friendly, high quality voice data collection while minimizing human manipulation. This will include integrated acoustic amplifiers and acoustic quality standardization. - To implement Federated Learning technology to allow analysis of multi-institutional data while minimizing data sharing and preserving patient privacy Specific Aim #4: Ethics Module - To integrate existing scholarship, tools, and guidance with development of new standard and normative insights for identifying, anticipating, addressing, and providing guidance on ethical and trustworthy issues from voice data generation and AI/ML research and development to clinical adoption and downstream health decisions and outcomes. - To develop new guidelines for consenting to voice data collection, voice data sharing and utilization in

the context of voice AI technology Specific Aim # 5: Teaming Module: - To build bridges between the medical voice research world, the acoustic engineers, and the AI/ML world to promote the integration of tangible clinical application for Voice AI algorithms Specific Aim #6: Skills and Workforce Development Module - To develop a unique curriculum on voice biomarkers of health and the development, validation, and implementation for AI models that are FAIR and CARE - To create a community of voice AI researchers, especially those from underserved communities, and foster collaborations to promote application of ML for Voice Research - To engage a broad range of learners with competency assessment and mentorship

Public Health Relevance Statement

As Voice is increasingly being recognized as a biomarker of health by the tech world and Voice AI is gaining attention from multi-nationals such as Google, Amazon, Mozilla and Apple amongst others, many important issues related to patient privacy protection, ethical and fair representation of population, and clinical accuracy are arising. As a multidisciplinary group of academic experts, we aim to influence and guide the world of Voice AI by ensuring patient protection through ethical and fairness principles and create safe, innovative infrastructures to disseminate ethically sourced data for the future generations of Voice AI researchers.

NIH Spending Category

No NIH Spending Category available.

Project Terms

Acoustics **Address** **Adoption**

Alzheimer's Disease **Amplifiers** **Apple**

Attention Benign Biological Markers

Bipolar Disorder Bridge to Artificial Intelligence

Categories Childhood

Chronic Obstructive Pulmonary Disease

Clinical Cloud Computing Collaborations

Read More

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15

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Administering Institutes or Centers
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Budget Start Date
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Budget End Date
30-November-2026

No Cost Extension
N

Project Funding Information for 2025

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$4,660,942

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Indirect Costs
$588,621

Year	Funding IC	
2025	NIH Office of the Director	$4,660,942

Sub Projects

No Sub Projects information available for 3OT2OD032720-01S3

Publications

Disclaimer

No Publications available for 3OT2OD032720-01S3

Patents

No Patents information available for 3OT2OD032720-01S3

Outcomes

The Project Outcomes shown here are displayed verbatim as submitted by the Principal Investigator (PI) for this award. Any opinions, findings, and conclusions or recommendations expressed are those of the PI and do not necessarily reflect the views of the National Institutes of Health. NIH has not endorsed the content below.

No Outcomes available for 3OT2OD032720-01S3

Clinical Studies

No Clinical Studies information available for 3OT2OD032720-01S3

News and More

Related News Releases

No news release information available for 3OT2OD032720-01S3

History

No Historical information available for 3OT2OD032720-01S3

Similar Projects

No Similar Projects information available for 3OT2OD032720-01S3