DigiBeat

Overview:
DigiBeat Health Monitoring Systems is a medical device startup whose focus is removing the barrier of in-home stethoscope examinations through the use of powerful AI paired with an intuitive Augmented Reality (AR) guidance system. DigiBeat's ecosystem consists of a physician dashboard and a mobile application for patients which streamlines health data collection, processing, and synthesis. Enabling the completion of exams independently at home, without the assistance of a medical professional, allocates physicians valuable time towards diagnostic analysis. Physicians with more time for this critical job function generate greater revenue through an increased volume and quality of CPT billing code determinations.

Clinical Pain Points:
- **Documentation impedes efficiency.** Studies show physicians spend as much as 10 minutes documenting for every 1 minute of patient care.
- **Data collection consistency is severely lacking.** Data collections are limited to in-clinic visits with weeks between collection points.
- **Data collection is an inefficient practice.** Manually collecting and inputting data creates time constraints and leaves the possibility for human error.
- **Collecting additional patient data has a high resource cost.** Physicians are limited in their ability to make early diagnosis and increase billable hours due to resource constraints.

DigiBeat's Solution:
Our platform utilizes Augmented Reality to guide users through the heart exam workflow which can be completed by anyone regardless of their level of expertise. The efficacy of our AI model in its initial stages far surpasses competitors in the market which represents a marked improvement when compared to trained professionals.

Target Markets:
- **Cardiologists** – 60 million cardiology patients – $2.1M annual profit per clinic, $19.5B annual TAM
- **Primary Care** – 101 million primary care visits – $233K annual profit per clinic, $1B annual TAM
- **Consumers –** $2.29B annual revenue – comparative markets range from $1.7B to $2.45B annual TAM
- **Insurance Payers –** 30% of total market volume – $284M annual payer savings – $229M annual TAM

Traction:
- **IP** - Provisional and Utility patents submitted. Multinational design patents approved.
- **Hardware** - Working prototypes of our digital stethoscopes in use with data collection - (DFM complete).
- **Application** - A working prototype of the AR guidance system is in field use. Face, heart location, age, sex, and race detection functioning.
- **Regulatory** - QMS 80% complete with target of March 510K submission to FDA.
- **Data Collection** - Cardiologist partnership to lead an investigational clinical trial of our device to collect training data on high risk patients. Free form data collection program in progress collecting video recordings of the general public interacting with our device for improved AR guidance.
- **Data labeling/Warehousing** - AWS Mturk interface developed for scalable labeling efforts by clinical professionals. Backend data warehousing architecture in place.
- **AI/Machine Learning** - Performed training and validation tests on publicly available heart data with extremely positive results in detecting abnormal heart sounds (murmurs, Afib, stenosis) with reported numbers (91% Specificity & 95% sensitivity) out performing a trained professional.

Management Team:
Clifford Steele, Co-Founder & CEO
Cliffords earned his aerospace engineering degree from Embry Riddle aeronautical university while working in the skydiving industry developing and testing parachute equipment. He co-founded a product development firm that provided clients: design, engineering, and manufacturing/assembly services to bring their ideas to market. Through this experience he raised capital, built teams, and developed internal IP, on over 30 products that are currently sold through various e-commerce and big box stores. Cliff gained two years experience in the medical device design and manufacturing field from his contract work at Philips healthcare. There he launched new MRI coils from design through production and validation.

Winston T. Richards, MD, Co-Founder & CMO
Winstons is a practicing surgeon located in North Central Florida with a background in medicine, applied mathematics, and electrical engineering from Penn State University and Princeton University. Winston continued on to be a key investigator in 37 research trials raising over $600k in sponsored notices of awards(NOA). He has over 20 years experience as a practicing ER surgeon. 21 medical publications, experience as an assistant dean at University of Florida, and a vast network of key medical decision makers and practitioners. Winston's credentials not only allowed him to see a better future for the medical industry; but he was able to conceptualize the first DigiBeat stethoscope and continues its development to surpass current medical standards.

Karl Dockendorf, Co-Founder & CTO
Karl earned both electrical and computer engineering degrees before following up with his Ph.D. in biomedical engineering (neural engineering) from the University of Florida.
Karl has broad computer vision, machine learning, cloud, embedded device, and IP protection experience with a long history of funding, executing, and achieving goals in self-directed projects like, DARPA programs, and at startups. As part of Paracosm over $5M was raised and he was also Principal Investigator for winning a $17M DARPA ML proposal.