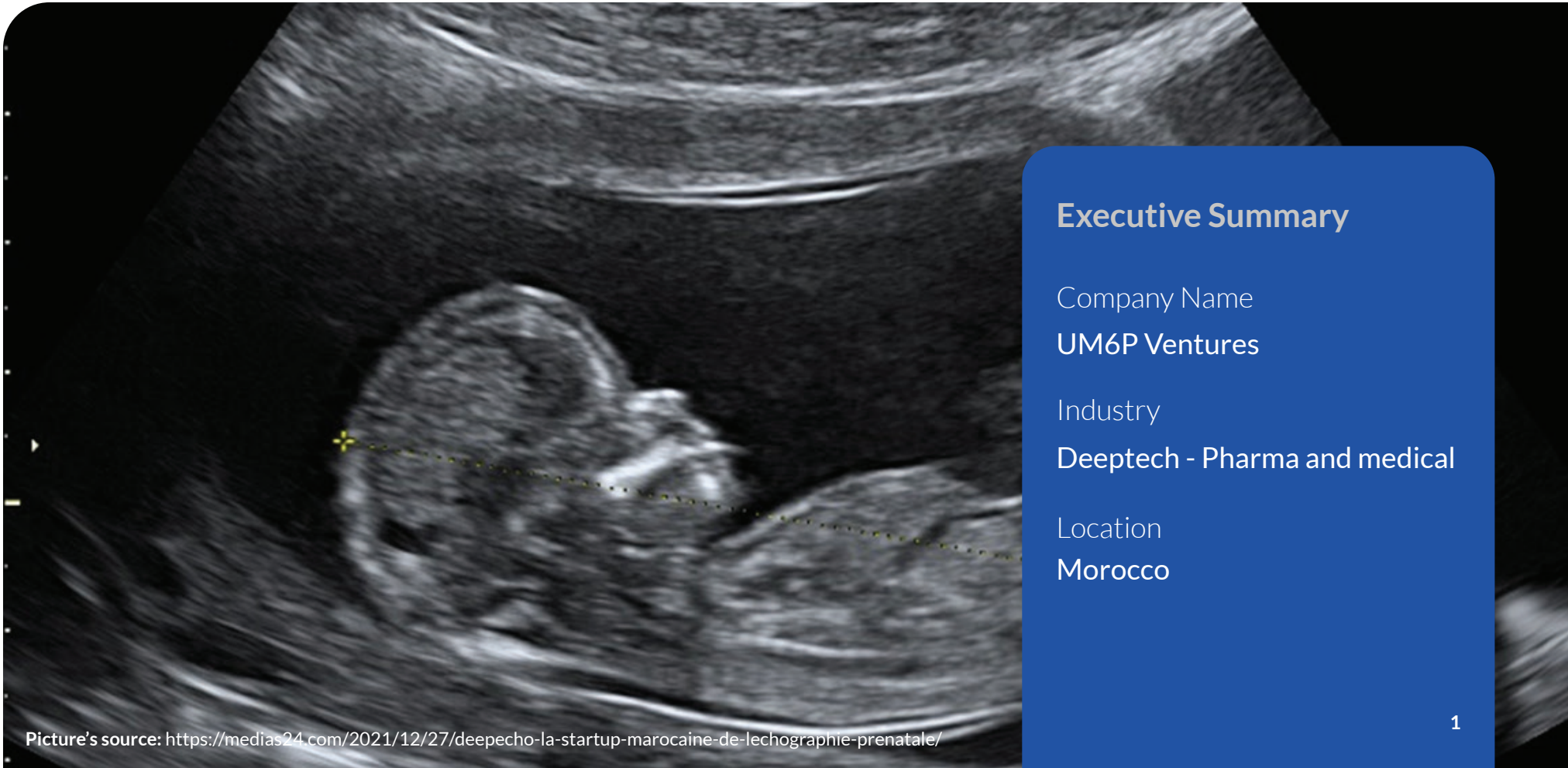
UM6P VENTURES

New AI healthcare fetal solutions: Challenges and Opportunities

USE CASE: DeepEcho uses Machine Learning to improve outcomes for preventive and predictive diagnosis detection of prenatal complications.



Picture's source: https://medias24.com/2021/12/27/deepecho-la-startup-marocaine-de-lechographie-prenatale/

Executive Summary

Company Name

UM6P Ventures

Industry

Deeptech - Pharma and medical

Location

Morocco

Introduction

DeepEcho emerged from the startup studio "AIOX Labs" after the culmination of several cycles of collaboration between health institutions and researchers. Back then the startup was at an early stage of maturity and a combination of several risks made its financing difficult to arrange through traditional investment offers despite its strong potential.

The risks associated with this stage mainly involved intellectual property, regulatory compliance, scarcity of the required talent, specific infrastructure required for its development, and the creation of a competitive product that will meet user needs. UM6P Ventures plays an active investor role with Deeptech project leaders by integrating them into its ecosystem. This approach develops the scientific and technological potential of an innovation- while leveraging the expertise, talent, and infrastructure available to de-risk these startups through support and investment. This use case highlights the key success factors of early-stage venture capital investment in a Deeptech startup, as well as the challenges and the potential of these innovations for Morocco and Africa.

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Context

Fetal imaging plays an important role in the delivery of valuable information during pregnancy for both doctors and women. This information will lead women to actively request fetal scanning, as it gives them knowledge about their fetus, reassures them of the health of their fetus, and brings a sense of reality to their pregnancies.

Deep-learning (DL) and Machine learning (ML) algorithms are becoming the standard for processing ultrasound (US) fetal images. Despite the large number of research articles already presented in this field, most of them focus on a larger subset of medical-image analysis or do not cover all fetal DL applications.

Recently, fetal DL applications have become increasingly important because of their potential to improve the understanding of fetal development and maternal-fetal health. DL models can analyze large amounts of data from fetal ultrasound images and signals, to extract meaningful information and help the early detection of anomalies and potential health issues.

Through high-performance DL algorithms, DeepEcho, **a Moroccan based startup,** has created a software-based solution to analyze and make early prenatal diagnoses via ultrasound scans to ensure the timely treatment of high-risk pregnancies. In addition, minimally trained clinical professionals can use DeepEcho in unconventional healthcare settings.

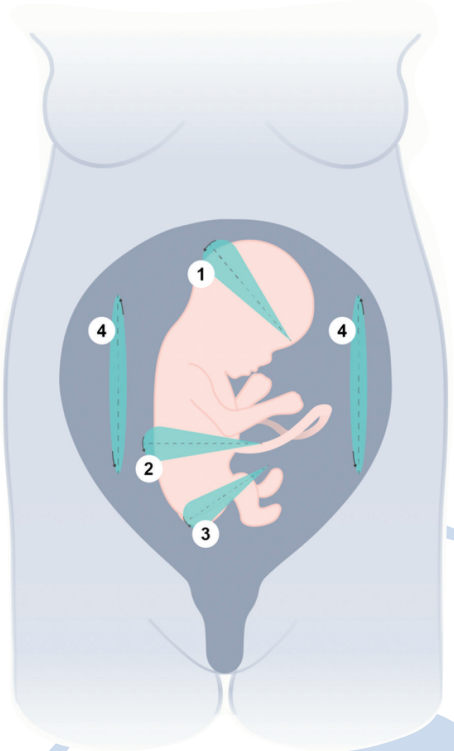
The startup team has already achieved 95% segmentation accuracy by algorithms that are able to measure the main fetal structures with extreme precision based on one of the world's biggest annotated fetal ultrasound image databases. DeepEcho has what is considered to be one of the world's largest fetal ultrasound annotated dataset and has signed agreements with multiple health centers in Morocco for further data access, labeling expertise, and clinical trials. The startup also has a strong and complementary team of founders with scientific and technological knowledge, excellent business acumen, and execution capabilities.

Challenges: Fetal mortality in Africa

Access to quality antenatal care is a major challenge for the health sector in Africa. Fetal mortality, which refers to the death of a fetus before the completion of 28 weeks gestation, is a significant public health issue in Africa. According to the World Health Organization (WHO), Globally, an estimated 8 million newborns are born with a birth defect every year. Nine out of every ten children born with a serious birth defect are from low- and middle-income countries. The lack of quality antenatal care, poor maternal nutrition, infections during pregnancy, and limited access to emergency obstetric care all contribute to fetal mortality in Africa. Africa needs a technological solution to address fetal mortality due to a lack of staff and resources in hospitals. In addition, there is a need for increased investment in research and data collection to develop effective interventions that address this important public health issue and better understand the factors contributing to fetal mortality in Africa.

Solution

The solution developed by DeepEcho's team has the ability to provide Morocco and Africa with the most innovative medical diagnosis technologies at scale. It will contribute significantly to the reduction of fetal mortality percentages. UM6P Ventures is committed to provide its portfolio startups pre-series A capital and platforms of excellence through its ecosystem to help them accelerate their business and achieve their technology goals. UM6P Ventures provides Deeptech Ventures with capital and advanced sourcing of talent, subject domain-expertise, and the ability to access specialized equipment and infrastructure. UM6P Ventures' Venture Builder offer leverages vast knowledge and business experience by hiring experts and best-in-class talent for its portfolio startup. UM6P Ventures provided DeepEcho with the right technical expertise through senior experts who could quickly deliver the right frameworks, advice, and recommendations that can be applied to further develop the technology.



Milestone achievements

UM6P Ventures' investment in the pre-seed round allowed the start-up to reinforce and structure the core team by recruiting deep learning and machine learning engineers. Through UM6P Ventures' introduction, the startup was able to gain access to the prestigious Plug and Play Africa accelerator program, which provided them with a valuable opportunity to connect with global investors and secure additional funding to support their growth. In addition to developing the scientific minimum viable product into a commercially viable product, the funds were used to run and validate the clinical trial which was the next major milestone. The startup team was successfully able to increase data collection and labeling two to three times faster, drastically increasing the accuracy for ML and AI models including classification, segmentation, and quality. Aside from capital, the startup benefited from UM6P Ventures' business expertise in establishing the right KPIs to track and measure DeepEcho's progress. In order to conduct healthcare research projects the startup tapped into the best PhDs available. Through the introduction to experts in the US medical industry the startup received support in multiple areas including the advisory board structure, financing, MoU reviews, go to market, the IP process, and product positioning. In addition, DeepEcho benefited from connecting with other Moroccan VCs for subsequent fundraising rounds and from support during the International Development Research Center grant approval process to accelerate the R&D phase for the project.

According to DeepEcho's **CEO Youssef Bouyakhf**, a passionate Moroccan entrepreneur with scientific and business backgrounds,

> **As for DeepEcho's next steps, we are currently strengthening our relationship with Moroccan, African and International VC partners and startups in preparation for future pilot projects in the continents. We are also working on extending the features of our solution to cover a larger part and the critical steps of the fetal ultrasound diagnosis. The startup is also in the process of a FDA approval submission in order to have access to one of the largest healthcare markets in the world.**