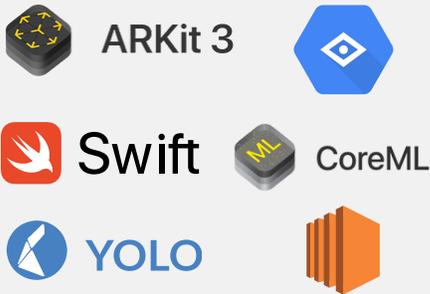![TRIGENT — OVERCOMING LIMITS]

An AI/ML-powered AR app to find the perfect fit footwear

Summary

A global leader in fashion accessories uses AI & Augmented Reality to deliver perfect fitting shoes that delight customers and reduces product return by 57%.

Technology Stack

- ARKit 3
- Swift
- CoreML
- YOLO

- iOS AR Kit
- Core ML Framework
- Vision Framework
- Yolo for object detection
- Cloud: AWS EC2 LARGE P4 WITH GPU BEEFED UP
- Open source tools to annotate
- LiDAR sensor for better surface detection
- YOLO CNN merge on top augmented AR 60 fps throughput

About the client

The technology driven fashion accessories retailer uses a mobile-centered strategy powered by cognitive technologies to engage users and drive business growth.

The company is the global leader in fashion accessories with a fast-growing comfort and wellness footwear line driven by the brand's technology capabilities. With computer vision, IoT sensors, Augmented Reality, AI and machine learning technologies, they remain dedicated to advancements in foot health and comfort. This objective is driven by the company's unwavering goal to keep people feeling great on their feet.

Business need

Determining the precise size and contours of the feet is critical to ensuring the right fit, comfort and design of a user's footwear. With the millennial audience increasing shopping online, the brand needed a digital solution to help customers determine these factors. This would also address the single largest factor that contributed to returns for its products sold online and minimize store visits for this reason.

The client uses several state of the art technologies in the design and production of its footwear. They preferred a digital solution that could fit seamlessly into the omnichannel shopping experiences available to the customer.

Image source: Analytics Insight

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> Finding experience that can drive new age products in the AI/ML realm can be a challenge. We were pleasantly surprised by the quality of expertise Trigent has in hand. Their AI/ML engineers quickly evaluated, understood, and delivered on our unique requirements, presenting us with a fully functional go to the market product within tight timelines.

An industry-first solution, designed by Trigent

By leveraging Azure services for compute, storage, network & security along with using the Microsoft Cloud Adoption Framework for Azure, they have accelerated the agility, governance, and cost benefits of their Azure investment.

Collaborative Approach to Solution Design:

Design workshops involving experts from Trigent and the client explored the available alternatives. Trigent's prior experience in deploying advanced technologies enabled the team to assess the opportunities and the limitations of the various options. Understanding of the current technologies in use by the client, allowed for determining the integration considerations to be factored in at the design stage.

The team finalized on a solution that leveraged the inherent capabilities of the mobile phone, specifically the camera. The advantage of this design was the widespread availability of the device and its extensive use for shopping-on-the-go.

Customer Experience Overview:

Using the client's mobile app, shoppers use the camera and Augmented Reality technology to capture the attributes of their feet. This information is run through various algorithms and the embedded AI engine determines the size, contours and related parameters. This data is used to recommend the ideal footwear design, present the relevant options from the catalog or allow for a custom design as desired by the shopper.

For the customer, it is a single seamless shopping experience, enhanced by the innovation.

AI & ML Implementation:

The solution involved building around an open-source algorithm and adapt it to the current need. Being an industry-first, there was no training data available to enhance the algorithms. As part of the solution development, Trigent undertook a significant effort to capture primary image data, tag and annotate the images for accurate Machine Learning. The training data included images against different backgrounds, lighting conditions, viewing angles and partial images.

This exhaustive, laborious and time consuming process undertaken by Trigent was the vital factor in the accurate determination of the size & fitment. The margin of error being less than a millimeter.

Application Design:

Trigent undertook the application development effort and adopted the agile methodology. As part of its "Quality in DevOps" approach, the QA team was involved in the development sprints, which allowed for faster detection of issues and fixes within the sprint. In turn, this provided for faster iterations and faster time-to-market. This proved to be crucial as the teams needed to react to market feedback on the innovations and resolve issues or roll out enhancements quickly.

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Particular attention was placed on personal data security. As the application involved the use and capture of user details via the camera, user identifiable information needed to be masked or removed for user safety & security.

Client benefits

The client was able to maintain their dominance in the use of technology with their new-age offering. Their futuristic concept not only served to resolve a present-day challenge of helping users find their right fit shoes, but it also accrued other business benefits such as:

- 3x Increased engagement and sales
- 17% increase in the user base buoyed by millennials
- 57% decrease in the number of product returns due to highly accurate measurements
- Provision to develop multiple similar applications for measurement and behavioural detection
- The application encourages contactless transactions ensuring optimal hygiene and convenience
- Distinction of being a leading technology innovator in the fashion retail space

About Trigent

Trigent is an early pioneer in IT outsourcing and offshore software development business. We enable organizations to adopt digital processes and customer engagement models to achieve outstanding results and end-user experience. We help clients achieve this through enterprise-wide digital transformation, modernization, and optimization of their IT environment. Our decades of experience, deep domain knowledge, and technology expertise delivers transformational solutions to ISVs, enterprises, and SMBs.

We offer end to end consulting services, design, development and managed services across Infrastructure, Cloud, Mobility, BI, Analytics, Product Engineering, QA & Testing, IoT, Big Data, and Artificial Intelligence.

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