daffodil

Success Story

Developing a voice-first super application for a US-based AI technology company

Client:
US-based IT Firm

Industry:
ITES

Country:
US

Our Role:
Software Product Engineering

About the Client

The client is a Los Angeles, US-based technology company with expertise in developing AI-based voice assistants. It is one of the most promising AI-powered startups, founded by a renowned American record producer who was behind some US chart-topping pop music albums.

The company also produces wearable devices that can be operated with AI-powered voice commands. They specialize in providing businesses the tools to develop platform-agnostic conversational experiences that mimic human speech.

Key Facts

50%	2x	30%
software component reusability	faster time-to-market	cost optimization for future releases

Services Used

⌖ **Software Engineering**

Technology Stack

- Flutter ◆ Dart
- ⚛ React
- 🐍 python™
- aws
- ⎈ kubernetes

The Situation

Super apps are all the rage these days. A super app is a platform that brings together multiple services under one umbrella. The supported apps within the super app can be referred to as 'sub-apps'.

The technology firm that sought Daffodil Software's assistance had an AI-powered super app that offers services in varied domains including hospitality, retail, telecom, travel, finance, automotive, etc. By using Natural Language Processing (NLP) as the core technology, conversational solutions for businesses and consumers are created in different domains.

To extend the services of this super app, they wanted to introduce a new sub-app, called the restaurant app. This voice-enabled restaurant app was expected to allow consumers to search for nearby restaurants and make table reservations. In addition to this, the app should provide users with weather updates so that they can change their plans/preferences accordingly. Some of the key requirements were as follows:

- Some performance and UI/UX improvements that needed to be done in the existing sub-apps.

- Integrate AI voice querying so that the above sub-apps could be operated using a varied set of voice commands.

- The existing weather sub-app had a dated look and feel and performance issues. It needed to undergo some major UI/UX updates and performance enhancement.

- There was a need to create visually appealing, reusable and interactive widgets for common use among the sub-apps.

The Solution

The key objective of the Daffodil team was to develop sub-apps that would enhance the end-user experience in all ways possible. The entire code repository was audited to understand the factors influencing the performance of the super app. Sufficient R&D was carried out to come up with the most interactive UI solutions which were up to the latest global UX standards.

The sub-apps were built over the Flutter UI framework with the Dart programming language for platform-agnosticity. Flutter was also chosen for the creation of reusable widgets for common use among all sub-apps to ensure consistency across the super app.

Developing the Restaurant Sub-app

Our team built the restaurant sub-app from the ground up by creating a mechanism for aggregating restaurant-specific data using Python-based web scraping. This helped automate the repetitive parts of searching for a restaurant online, speeding up the data collection process by writing the code for it only once. Node APIs were used to serve the restaurant data to the frontend on Flutter. The following capabilities were built into this sub-app:

- It suggests restaurants in the order of proximity to the user's location.

- It lets users mark restaurants as favorites and get future recommendations accordingly.

- The AI voice assistant asks questions like where the user wants to go and what cuisine they prefer to bring up restaurant listings.

- The AI also lets users make reservations directly from the sub-app.

- Over several interactions with the user, the AI learns the user's preferences with respect to location, cuisine, and meal timings to make better recommendations.

Transforming the Weather Sub-App

This existing sub-app was analyzed using heatmaps and our team found that its UI was cluttered, unappealing and unresponsive. The sub-app was not easy to navigate and had performance issues. The team resolved these issues in the following ways:

- Several fixes were rolled out for rendering issues and the design was stabilized. The UI was sharpened and brought up to UX industry standards. Better animations and motion to UI elements were added to enhance the interactivity of the sub-app.

- An AI voice assistant was built into this sub-app, allowing users to ask a series of questions about the weather and get instant results.

- The Weather sub-app was linked to the Restaurant sub-app, providing users with live updates about the weather around the restaurant that they are planning to visit.

- Additionally, the team found and resolved about 90% of security vulnerabilities in the Weather sub-app.

The AI Voice Assistant

AI-enabled Automated Speech Recognition (ASR) was integrated into both the sub-apps for retrieving weather and restaurant-related information. Our developers made the AI voice assistant highly conversational in nature with a rich set of voice queries. The wide variety of voice commands included around 50 voice queries with over 250 variations. The frontend was connected to Google speech2text modules. Machine Learning (ML) based intention detection and Natural Language Processing ensured that accents, emphasis, and inflections in the user's speech could be understood by the AI.

The perceived intelligence of the AI could increase after every interaction with a user and the relevance of information will increase each time. The AI will ask appropriate questions like where the user would like to go, what type of cuisine they'd like, and help make reservations directly at the restaurant of their choice, while at the same time learning the user's preferences for making recommendations in the future.

Database And Reusable Widgets

All the app processes take place on a lightweight and fast database, HiveDB, ensuring a short response time in accumulating restaurant and weather search results. Daffodil built custom algorithms to handle mapping issues between the varied Restaurant APIs. Several reusable UI widgets were also created in Flutter for common use among all the sub-apps, in addition to the Restaurant and Weather ones. This would ensure consistency throughout the super app.

The Impact

Daffodil's team delivered the weather and restaurant sub-apps that will ensure an increase in user engagement and app store downloads for the super app itself because of their updated look and feel and optimized performance. The integration of AI voice assistants enhances the user-friendliness of these sub-apps even more. The AI also learns custom user preferences for better restaurant recommendations and these recommendations become more tailored over time.

Infrastructure downtime in the super app has been reduced by over 50% and widget reusability has ensured uniformity across the super app. The team plans to automate API version upgradation in the future. Additionally, OpenVPN would be set up for user creation and management to save time. There are also plans to shift the database to ObjectBox, an edge database for both hybrid and native platforms.
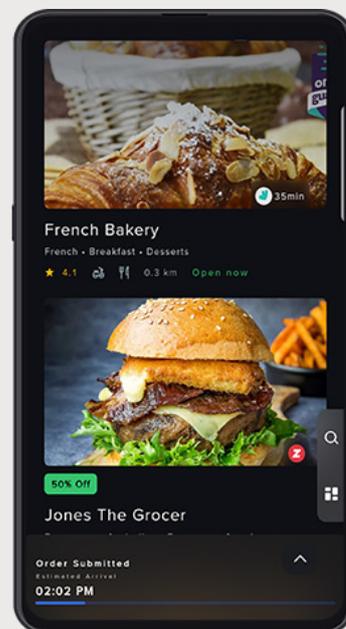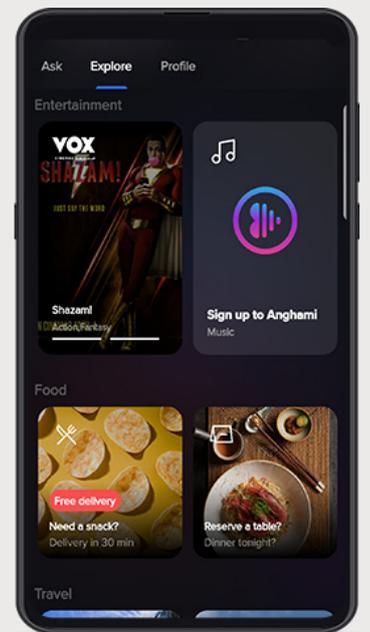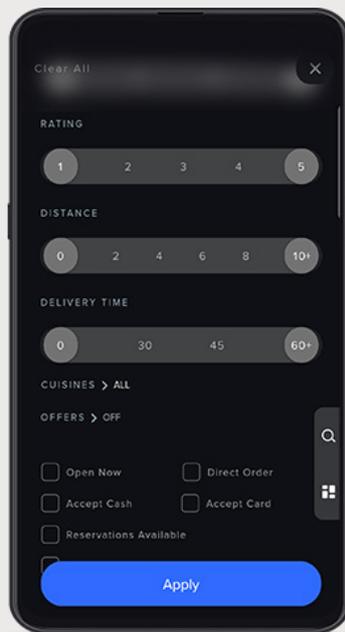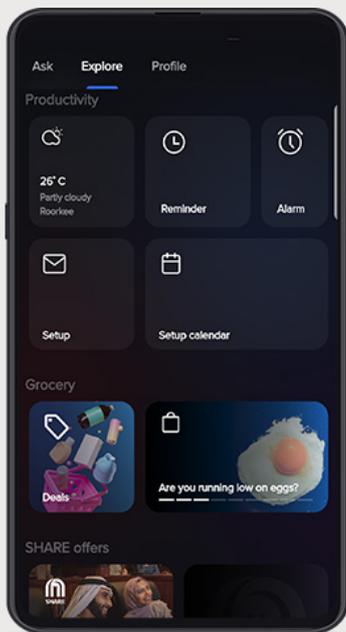
About Daffodil

For more than 20 years, Daffodil Software has been a trusted software technology partner to organizations across the globe. We take pride in our ability to look beyond technologies & deliver innovative solutions.

Daffodil is a CMMI level 3 accredited organization with innovation, tech agility & process orientation rooted deep within the core. Our team of 1000+ technologists strive to shape the tech industry and help businesses elevate their value proposition through technology.

Technology Partnerships & Certifications

Microsoft Partner Silver Application Development partner	**Google** Cloud Premier Partner	**aws** partner network
Microsoft Partner Silver Collaboration and Content	**Ui**Path Partner Robotic Process Automation	**PubNub**
CERTIFIED **ISO** 9001:2015 COMPANY	**ISO** 27001:2013	International Organization for Standardization **ISO** 20000

Awards & Accolades

Deloitte. Technology Fast500 APAC Winner	**IT EUROPA** EUROPEAN IT & SOFTWARE EXCELLENCE AWARDS	**zinnov ZONES**	**Great Place To Work.** Certified INDIA
mobileweb award **2020**	INDIA'S MOST ADMIRED BRAND 2020 INDIA'S CHOICE	**CMMI** level 3	THE ECONOMIC TIMES **Btb** BEST TECH BRANDS 2021

GRANDVILLE, USA

2885, Sanford Ave SW #28585, Grandville, MI 49418 USA

GURGAON, INDIA

9th Floor, Tower B1, DLF SEZ Silokhera, Sector 30, Gurgaon 122001

DUBAI, UAE

Suite No.: 407- 412, Clover Bay Tower, Business Bay, Dubai United Arab Emirates

HISAR, INDIA

6th Floor, Metropolis Mall, Industrial Area, Hisar, Haryana - 125005