Mushroomity

Hello! Welcome to the presentation of the Mushroomity project! We will describe what this project is about and how we have accomplished it.

Before we begin, let me ask you a question: How often do you collect mushrooms? Whether you are a scientist or simply a mushroom enthusiast, the main objective is to understand which types of mushrooms are safe to analyze or even consume, and which ones are not. Unfortunately, not everyone knows how to do that. This is where our application can help. Our project is an application that identifies types of mushrooms using photos and specific parameters. You can try it out by downloading it from [this link](). Now, let's dive into the story of how we created it.

Planning

After developing the idea, we started planning by creating a backlog for the project. Firstly, we divided the work into four teams: Design, Dataset, ML, and Flutter. Each team had a leader who oversaw the entire process and kept everyone informed of any updates.

In the initial stages, we decided to incorporate features that set us apart from our competitors:

1. The application is designed to work offline, without requiring an internet connection.
2. We aimed to minimize false-negative attempts, allowing users to avoid picking poisonous mushrooms.

First attempts

After completing the planning phase, we began our work. During the first two weeks, Timofey focused on finding mycologists who could provide us with deeper insights into mushrooms. Simultaneously, the Dataset team collected numerous photos of mushrooms and categorized them into families and types. Meanwhile, the Flutter team recalled Dart language and Flutter framework. They delved into numerous resources, exploring the vast array of materials available. However, we discovered that not all resources fully showcased the framework's comprehensive capabilities, particularly when it came to its plugins. These plugins hold paramount importance in facilitating the smooth operation of crucial components such as the camera and AI integration.

Initially, we believed we could proceed without expert assistance. However, we soon realized our mistake and acknowledged that a significant portion of our work had been futile.

Kim Potapov

By the end of the second week, we connected with Kim, who proved to be invaluable. We had a one-hour conversation with him, during which he shared the best sources for our dataset and provided detailed explanations on identifying mushrooms. He also identified the mistakes we had made in the project, and we promptly reorganized our processes, discarding unnecessary work. Kim also suggested combining simple parameters with photos to enhance the model's accuracy. For instance, if it's challenging to determine whether a mushroom is growing on wood, the user could mention it after taking the photo.

Keep going

In the following week, we focused on all the necessary tasks. Two weeks prior, we developed our initial model, which achieved only 50% accuracy. However, by the next week, we improved its accuracy to 70%. Of course, our application cannot identify every type of mushroom since our focus was solely on mushrooms in Tatarstan.

What we have now

As we write this text, our application can accurately identify mushrooms from Tatarstan with over 90% accuracy. This means you can confidently explore the forest, safely collect mushrooms, and even learn more about different mushroom types through detailed descriptions provided by our application. Actually, a couple days ago we found that the model has troubles in determining not clear photos. To reduce similar cases, we will try to change a bit the model that it will take also metadata of the photo.