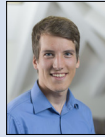




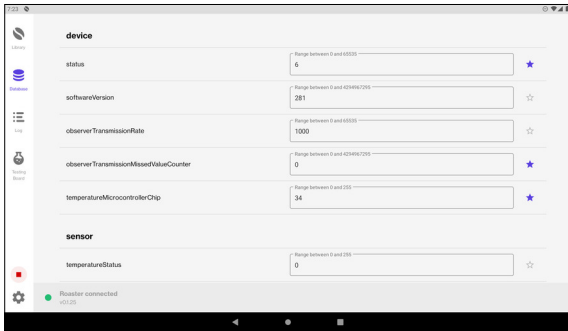
Lukas Geiter



Manuel Habert

Students	Lukas Geiter, Manuel Habert
Examiner	Mirko Stocker
Subject Area	Software
Project Partner	mikafi GmbH, Zürich

## Roasting Coffee Beans with Android

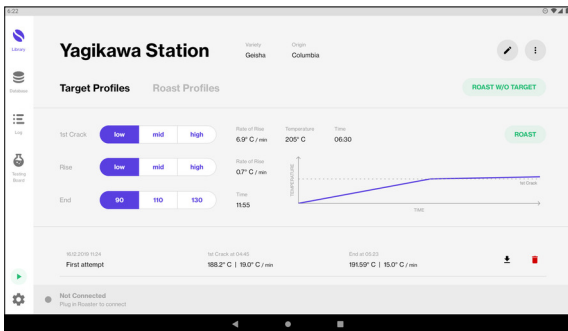


User interface for the microcontroller's database  
Own presentation

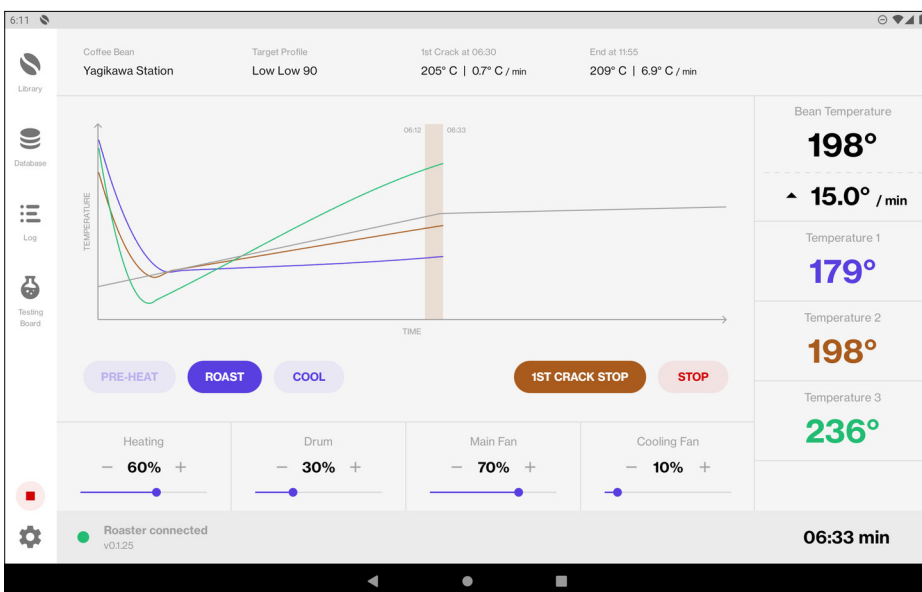
**Problem:** The startup mikafi is developing a coffee bean roaster for restaurants and coffee shops. To engineer the perfect product, the team at mikafi needs a powerful diagnostic tool to interface with the device. To test and debug the roaster's sensors, change settings and control the actuators, engineers require direct access to the key-value database at the microcontroller's heart. At the same time, roast experts need an interface to control the roast process and approximate a target temperature curve.

**Approach:** We've developed an Android app for tablets which covers both these use cases. The app is written in Kotlin and follows modern best practices. The tablet connects to the roaster via USB to create a reliable channel of communication with the microcontroller. Roast experts can manage coffee beans and import target temperature profiles. While roasting, the dashboard gives users control over the heating, drum motor and fans of the device. A chart visualizes the readout of multiple temperature sensors during the whole process. The collected information is stored and can be exported for further analysis. All application data is stored in a Cloud Firestore database. This provides a built-in backup and makes it easy to switch devices. Moreover, Firestore keeps a local copy of the data, allowing users to work offline.

**Conclusion:** Our app is going to be used by the team at mikafi to continue the design and development of their product. It is designed to be extended and updated as the roaster evolves or the need for new features arises.



Coffee bean detail view with target profiles  
Own presentation



Roast dashboard  
Own presentation