PROGRESS STATUS REPORT

NAME	REG. NO	TITLE
Brian Kipng'eno	SCT211-0078/2022	IoT engineer
Methusella Nyongesa	SCT211-0069/2022	Machine Learning Engineer
James Karanja	ENE212-0145/2022	IoT Engineer
Charles Mwangi	SCT212-0588/2022	Front-end Developer
Gerald Njamura	SCT212-0115/2022	UI/UX Designer
Shem Thuo	SCT212-0529/2022	Cloud Engineer
Maina Chrispin	SCT211-0006/2022	Back-end Developer

PROJECT EXECUTIVE SUMMARY:

Smart Nyuki is a smart beekeeping project that leverages the power of IoT (Internet of Things) to monitor hive vitals, ensuring optimal hive health and enhancing honey production. The data is collected from the hive and accessed from any smart device, with notifications being sent when attention to the hive is required, enabling real-time and remote monitoring of hives.

DAILY REPORT:

DATE	DAILY ACHIEVEMENT	CHALLENGES/BLOCKERS
02/05/2024	Onboarding, Project Leads Chosen	NIL
03/05/2024	Projects selected, Project teams assigned	NIL
06/05/2024	NIL	NIL
07/05/2024	NIL	NIL
08/05/2024	Projects introduced In-depth	NIL
09/05/2024	Work Stations Assigned, Team Coordination, Project poster created	NIL
10/05/2024	NATIONAL HOLIDAY	NIL
13/05/2024	Work Plan developed, Pitch deck crafted	NIL
14/05/2024	Website development commenced, Researched on apiculture in Kenya from the internet	Limited and untimely information that is suspected to be a quite inaccurate portrayal of apiculture in Kenya
15/05/2024	Planned on having primary research: Questionnaires developed, Beekeepers and beekeeping organizations contacted and the questionnaires shared with them	Minimal responses to the questionnaires received hence little primary data to work with
16/05/2024	Discovered technologies used in the field, Technical specification of the solution done	NIL
17/05/2024	Presentation of the pitch deck	NIL
20/05/2024	Pitch Deck refined, Adjustments on the website performed, List of needed resources researched on and developed	Knowledge gap in the best devices to acquire
21/05/2024	Successful field visit to Yatta Beekeepers' apiary	NIL
22/05/2024	Field visit assessed, A report on the field visit written, Redesigned the project's poster	NIL
23/05/2024	Some sensors and devices procured from the department, Architectural Implementation of the project refined, Website review with Sonia	Not all the needed devices were available and thus we couldn't begin working with them.
24/05/2024	Functional Requirements of the PWA noted, PWA UI design commenced	NIL
27/05/2024	Refined the functional requirements of the web app, Continued UI design, Researched on the integration of Machine Learning to the project	NIL
28/05/2024	Research on the working of the alert system in the PWA and Machine Learning Integration	Downtime and network lag in eduroam
29/05/2024	Research on programming the sensors	Downtime and network lag in eduroam
30/05/2024	Continued research on programming the sensors, Revamped the UI design	NIL
31/05/2024	Setting up the database - Firebase and cloud storage	NIL
03/06/2024	Designed circuit diagrams, simulations and prototypes of the implementation of the project. Did further modifications to the technical solution	NIL

04/06/2024	Programming of the sensors - DHT11, Began development of the web app - sign in page, Continued backend development - Firebase	NIL
05/06/2024	Continued programming the sensors - The sound sensor, Web development continued - modifications to the sign-in page, responsiveness	NIL
06/06/2024	Continued web development - configuration of user authentication on the web app, continued programming the sensors,	Buffering and downtimes in eduroam
07/06/2024	Performed analysis of the output from the sound sensor - made visualizations using python and Matplotlib	Buffering and downtimes in eduroam
10/06/2024	Continued with developing the web application - tweaking the front-end and back-end, Did research on datasets of beehive sounds that could be used with Machine learning	NIL
11/06/2024	Did analysis of sound - relative and absolute comparisons to get the most helpful readings, continued web app development	NIL
12/06/2024	Did an analysis on the power consumption and put measures in place to efficiently utilize power and conserve battery life, Continued web app development	Downtimes and buffering with eduroam
13/06/2024	Programming the sensors - added code for the other sensors, Continued web application development	Inability to test the code due to the missing devices
14/06/2024	Adjusted the code for the sensors to make use of power saving modes - sleep and thresholds	NIL
18/06/2024	Wrote the code for the LoRa concentrator, backend and frontend development	Inability to test the code
19/06/2024	Began 3D modeling of the hive and the sensors in them, backend and frontend development	NIL
20/06/2024	Finished 3D modeling, backend and frontend development	NIL
21/06/2024	Continued with backend and frontend development	NIL
24/06/2024	Continued with web application development	NIL
25/06/2024	Backend and frontend development	NIL
26/06/2024	Continued with web application development, Began integration of firebase to collect data from sensors.	NIL
27/06/2024	Bought the essential items to assist in constructing our hive model, Continued with web application development	Stores with the necessary materials were closed
01/07/2024	Began designing the model of the hive, Continued with web application development	NIL
02/07/2024	Finished designing the model of the hive, Continued with web application development	NIL

03/07/2024	Began linking the web application to firebase, worked on implementing Daraja API	NIL
04/07/2024	Worked on setting up the notification system in the web app	NIL
05/07/2024	Continued setting up the notification system and implementing the MPESA functionality	NIL
08/07/2024	Tweaked the front-end, Visit to Numeral IoT	NIL
09/07/2024	Web App development	NIL
10/07/2024	Web App development	NIL
11/07/2024	Web App development	NIL
12/07/2024	Web App development	NIL
15/07/2024	Web App development	NIL
16/07/2024	Web app development, Patenting	NIL
17/07/2024	Redid the database	NIL
18/07/2024	Web App development	NIL
19/07/2024	Web App development	NIL
22/07/2024	Web App development	NIL
23/07/2024	Web App development	NIL
24/07/2024	Web App development	NIL
25/07/2024	Did a redesigning of the UI for better user experience	NIL
26/07/2024	Continued working on the new UI	NIL
29/07/2024	Debugging	NIL

PROJECT NEEDS:

ITEM	SPECIFICATION	QUANTITY	PRICE
ESP32	TTGO T-Call V1.3 ESP32 Wireless Module	1	4000
Load cell amplifier	HX711 AD	1	500
Weight sensor(load cell)	Load Cell 0-50kg	1	400
LoRa modules	RFM95 LORA MODULE - 868MHZ	2	2400
Voltage Regulator	Voltage Regulator LM1117	2	60
Battery Holder	4-AA	1	300
TOTAL COST			**7660**

- Facilitation to visit the apiary, located in Ndarugo.

GENERAL BLOCKERS:

- The general unfamiliarity with IoT concepts has been a barrier that has slowed down progress although we're overcoming this by increasing our knowledge day by day. *Suggestion:* We would really appreciate it if we could be linked up with an expert in the field to give us general direction and to assess our progress so far.
- Delayed provision of sensors and other devices