beelab

SERICULTURE AND APICULTURE LABORATORY, SCHOOL OF AGRICULTURE, ARISTOTLE UNIVERSITY OF THESSALONIKI

📍 **Scientific responsible: Associate** Prof. Chrysa Tananaki
Email: tananaki@argo.auth.gr
Web: http://www.beelab.gr

AUTH e-LAB
Aristotle University of Thessaloniki-Electronics Laboratory

ELECTRONICS LABORATORY, PHYSICS DEPARTMENT, ARISTOTLE UNIVERSITY OF THESSALONIKI

📍 **Scientific responsible:** Associate Prof. Kostas Siozios
Email: ksiop@auth.gr
Web: http://users.auth.gr/ksiop

EMNIA3

EMBEDDED, NETWORKED, INTELLIGENT, AUTONOMOUS APPARATUS AND APPLICATIONS

📍 **Scientific responsible**: Konstantina Tsiapali
Email: ktsiap@emnia3.com
Web: http://www.emnia3.com

Bee population health, wellbeing and yield improvement through novel monitoring technologies

SmartBeeing

https://smartbeeing.web.auth.gr/

Despite the proven benefits offered using Information and Communication Technologies (ICT) in the agri-food sector, their utilization in the beekeeping sector is quite limited. In more detail, the main inhibiting factors include, among others, the lack of suitable tools adapted to the needs of the beekeeping sector, the high cost of their acquisition/installation/maintenance, as well as the requirement for specialized knowledge of use by beekeepers.

Within the framework of the SMARTBEEing project, a set of ICT tools will be developed that are required to effectively deal with beekeeping challenges and problems, which until now require periodic on-site control of bee colonies with a subsequent increase in costs and loss of valuable reaction time. In addition, a geographic database of beekeeping field data will be created, which will help researchers and organizations better understand the causes of global bee population reduction.

Specifically, the goals of the project are summarized in the development of low-cost automated solutions for:

- Early warning of impending swarming.
- Early diagnosis of orphanhood.
- Early diagnosis of diseases related to the conditions inside the hive.
- Detection of prolonged presence of an unfertilized queen.
- Increased food consumption due to adverse weather conditions.

- Ability to evaluate expected flowering/honey secretion (quantitatively and temporally) with the aim of increasing efficiency.
- Greater safety of bees against theft and their enemies.
- Better organization/management of the beekeeping unit.

The proposed platform

The design and implementation of the data collection and local pre-processing systems will be done using appropriate signal processing & feature extraction techniques with the main objective of significantly reducing the volume of data (to allow their seamless transfer to the computing cloud) without any loss in quality of measured data.

The implementation of this specific action will be done using Internet-of-Things (IoT) technologies. At the same time, techniques for local energy collection will be proposed and implemented, for the system to be energy autonomous.