

Bee Monitoring

Problems and Challenges

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The beginnings



- meetings with beekeepers
 - “Now, what should I tell to my mother?”
- differences in
 - language
 - motivation and expectations
 - “nice” problems (we need to publish)
 - vs. simple solutions (beekeepers need help)
 - **notion of time**
 - 3-6 month is a whole beekeeping season!
- Let’s develop a smart hive!

Lot's of existing solutions...

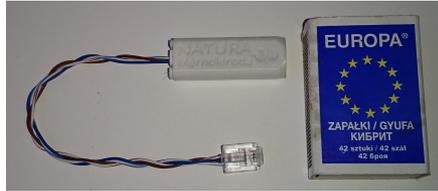
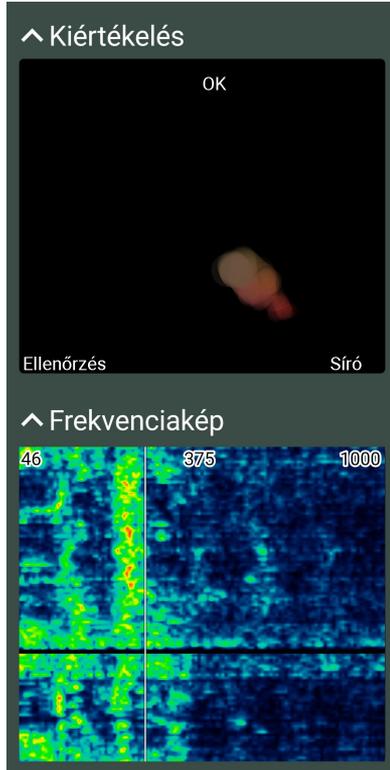
- temperature
- humidity
- weight
- camera
- audio

EXPENSIVE

**beekeepers (we talked to)
don't really trust these...**

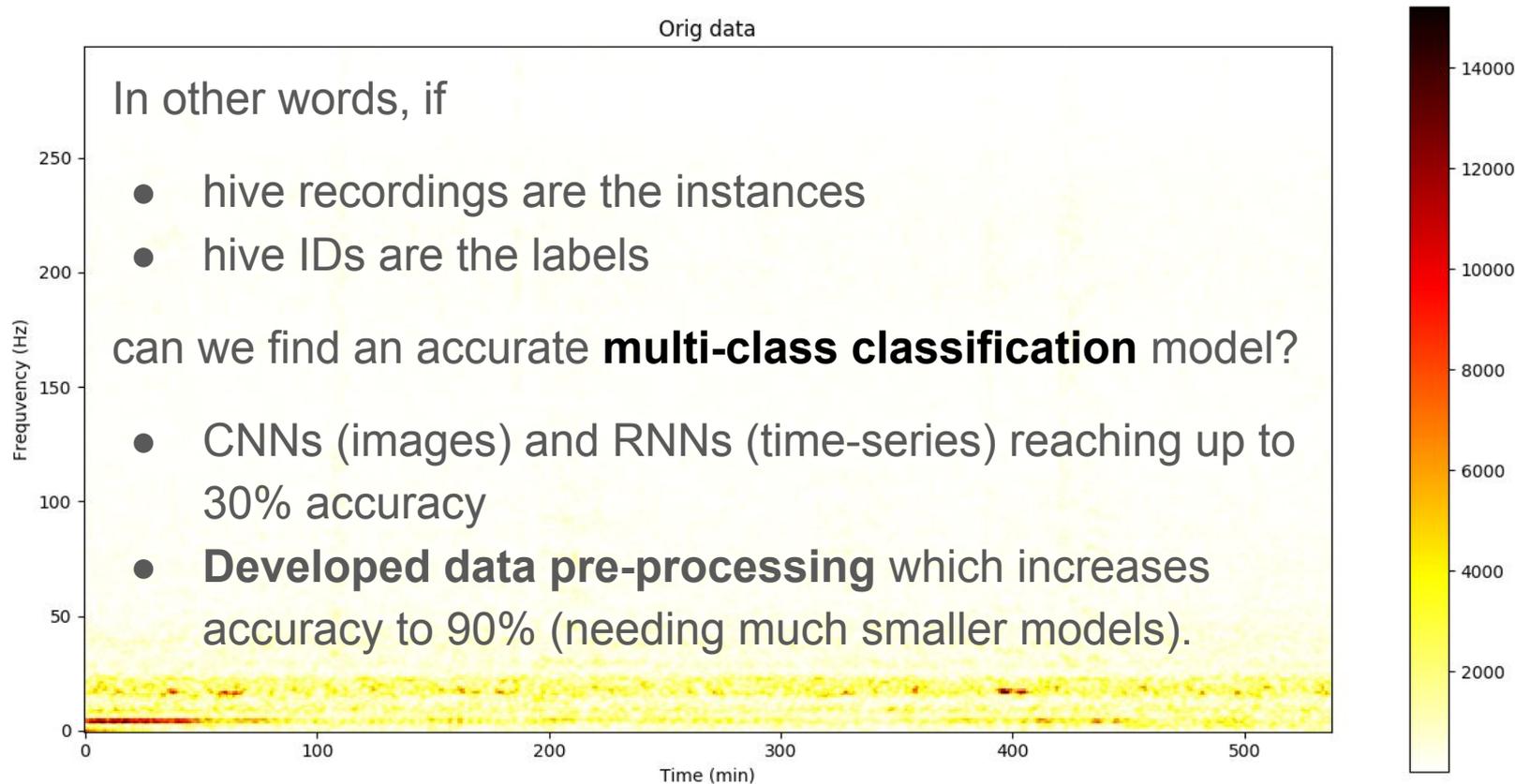


Beehive audio data



- customized recording device
- thousands of recordings
 - Spring 2020
 - 8s audio files
- however, **data are not labeled**
 - no time for it during the season
 - after the season, it's cumbersome

Does a bee hive (colony) have an “audio fingerprint”?



Issues when installing hardware

In the apiary

- weather conditions (hot, humidity, animals, ...)
- electricity (nomadic beekeeping)
- internet connection (nomadic beekeeping)
- wild animals
- safety (for the the beekeeper)

In the beehive

- **beeswax and propolis**
- **work ergonomomy**



Organizational issues

Seasonality

- active season from March to August
 - Rapeseed, Akacia, Sunflower
- not opening the hives below 15 degrees of Celsius

Sudden events

- weather conditions (not in the office next door)
- “bees are aggressive”
- diseases (have to burn the equipments)

Sensor installation

- various qualities and prices
- where to install? (various types of beehives)
- paperwork (public procurement, inventory, ...)



Thanks for your attention!

and to everyone helping/working on the project

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