Cow drinking monitoring tests with ultrasonic sensor setup Aug 12th and Sep 20th, 2022

Data description

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We tested a device that could potentially be developed for use in large scale drinking monitoring of individual animals. Our setup consisted of two plastic cylindrical containers having the inner diameter of 275 millimeters. On top of the other cylinder were placed two ultrasonic sensors that measured the distance to the water level in the container. The containers were connected with a hose (inner diameter 25 millimeters) so that the water level on both containers was always the same. Faucets shown on the image were completely open during the experiments that took place on August 12th and September 20th, 2022. Cows were able to freely access and drink from the second container which had the height of 100 centimeters in the first experiment and reduced height of 80 centimeters in the second experiment.

Two ultrasonic sensors were used and they were JSN-SR04T-2.0 ja Maxbotix MB7389. Sensors were connected to circuit board V2 ESP8266 Development Board (CH341) from which measurements were collected to a PC programmatically at about 0.3 second intervals. Both sensors had the resolution of 1 millimeter which corresponds to 0.6 liters in the used containers.

Image of the setup and its installation during the experiment are shown in the photographs. There was a small leakage in the container as is seen in the data (slow and constant decrease of water level). In the first experiment, the leakage was compensated by continuous flow of water after 17:30. On other times the containers were filled manually.

Videos are taken with no particular plan but, instead, when something interesting was seen. Timestamp in the filename refers to the starting time of the video in format YYYYMMDD_HHMMSSsss.

All times refer to Finnish time UTC+3.