

# Animal Feeding Dashboard

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Aug, 2025

## Overview

The **Animal Feeding Dashboard** is an interactive Shiny application designed to visualize, clean, and resolve feeding log data for animals. It supports overlap detection, benchmarking, and cumulative intake analysis, making it ideal for researchers, nutritionists, and farm managers.

## Features

- Upload feeding logs in CSV format
- Select animals dynamically from uploaded data
- Filter by date range (customizable via UI)
- Set overlap tolerance in seconds
- Detect and resolve overlapping feeding events
- Visualize feeding patterns with:
  - Interactive feeding timeline (`plotly`)
  - Accumulated intake plot
  - Total mass per animal
- View summary and overlap tables
- Download cleaned and resolved dataset

## Technologies Used

- `shiny` – UI and server logic
- `data.table` – Fast data manipulation
- `ggplot2` and `plotly` – Static and interactive plots
- `dplyr` and `lubridate` – Data wrangling and time handling
- `DT` – Interactive data tables

## Installation

Ensure R is installed and the following packages are available:

```
install.packages(c("shiny", "data.table", "ggplot2", "dplyr", "lubridate", "plotly", "DT"))
```

## Running the App

You can launch the app using R or Rscript:

```
# From R console
shiny::runApp("path/to/app.R", launch.browser = TRUE)
```

Or via terminal (Windows/macOS/Linux):

```
Rscript launch.R
```

Use the provided `run_launch.bat` or `run_launch.sh` scripts to auto-detect R, install packages and launch the app.

## CSV Format Requirements

Uploaded CSV files should include at least the following columns:

- `AnimalTag` – Unique identifier
- `StartTime`, `EndTime` – Feeding event timestamps
- `MassDiffKg` – Amount of feed consumed
- `DurationSec` – Duration on seconds
- `Feeder` – Feeder ID
- `Flags` – Flags

## Notes

- Overlap resolution logic is customizable via `tolerance_sec`
- UI elements like date range and overlap filters are dynamically generated

## Contributing

Pull requests are welcome! If you have ideas for new visualizations, benchmarking logic, or data cleaning modules, feel free to fork and submit.

## License

MIT License. See `LICENSE` file for details.

*Built with care by Fidel Maureira, for better science and better feed.*