Galv:
A Metadata Secretary for Battery Data

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Engineering Science
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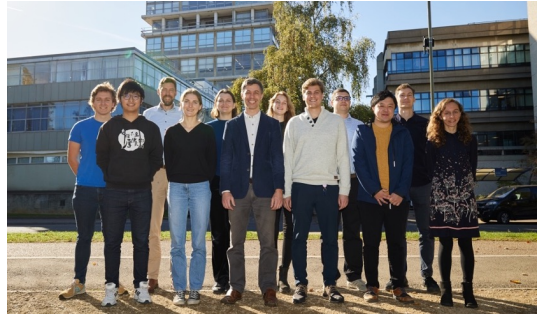
Battery
Intelligence
Lab

Oxford Battery Intelligence Lab

We are a research group based in the Engineering Science department at Oxford that work on,

- Degradation
- Modelling and Estimation
- Instrumentation and characterisation
- Full-scale applications

Principal: Prof David Howey



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Enable modelling workflows
Can I align my models with experimental schedules?
How sensitive is the battery to manufacturing variations?

Introducing Galv: A platform to solve these issues

Galv is a platform for battery data curation and storage

- Built around browser based data interactions
- Import data from various cyclers
- Interactively add metadata
- Built for single or multi lab usage
- Easily export for analysis

Play

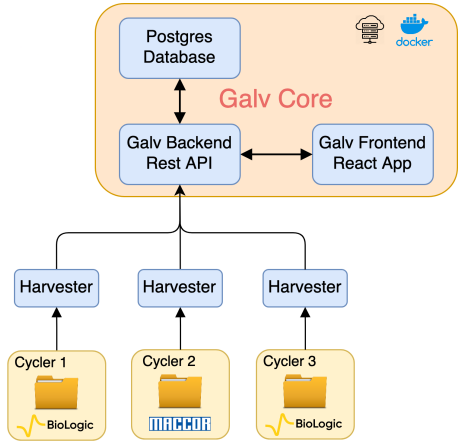
Galv is open-source, and aimed towards battery researchers

The high-level features include,

1. Fully mutable metadata, with browser based entry
2. Automated parsing for Ivium, Biologic, and Maccor
3. CSV mapping for all other cyclers
4. A tiered structure for test protocols, experiments, cells, and equipment
5. Security and privacy via separate administration for labs and teams.
6. PyBaMM experiment alignment for test schedule definitions

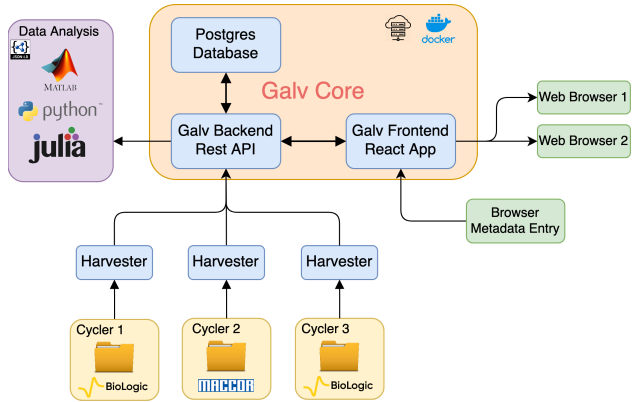
The core platform is modular, open-source

- The core platform is deployed via docker for modularity
- Easily cloud or locally hosted
- Deploys as a single package for simple installation



Interact with the data, on your terms.

- Browser frontend for data export, analysis, and metadata entry
- Direct access with your favourite analysis software



Easy deployment on your laptop/workstation

1. Install docker-desktop and docker-compose
2. Clone galv-team/galv-frontend
3. Run `docker-compose up –build frontend` within the cloned directory
4. Navigate to http://localhost:8002/
5. Login with `admin` and `admin`

DEMO

Demo Overview

- Galv is deployable locally, and cloud-based
- Metadata is a first-class object within the platform
- Security is managed via Lab, and Team administration
- Adding storage and uploading attachments is doable from the browser

Conclusion and Outlook

- We presented a framework for experimental data curation for electrochemical devices
- This platform is open-source and available for usage starting **today**
- A cloud-based solution is possible, but you can (should) start locally first!

Future Development:

- Stronger links to parameter identification packages (PyBOP)
- Formalising schedule representation
- Additional built-in parsers
- Better alignment with BattINFO ontology and JSON-LD capability

Get involved and become a developer and/or user!

GitHub Repository:
galv-team/galv-frontend

Frontend

Backend

Harvester

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