

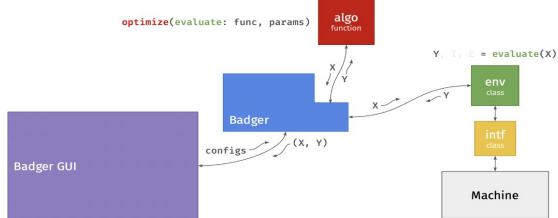
Introduction

- Optimization platform specifically for Accelerator Control Room (ACR)
- 3 modes specialized for different purposes
 - GUI Mode** - Designed for ACR operators
 - CLI Mode** - Run optimizations efficiently on terminal
 - API Mode** - Relevant for algorithm developers
- Helps streamline accelerator machine tuning tasks for daily operations



Components & Plugin System

Manages main components of optimization (algorithm, environment, interface)



Abstracts an optimization for through a setup called a "routine"

CLI Optimization Control

Task: Control CLI optimization pause, continuation, termination

Usage: `signal.signal(signal.SIGINT, handler)`

"captures" ctrl/cmd + c

```
(test_dev) edwardkim@Edwards-MBP-3: ~$ badger run -a silly -e TNK -c examples/silly.tnk.yaml
| iter | c1 | x2 |
| 1 | -1.1 | 0.0 |
| 2 | 8.549 | 3.186 |
^C
^C Optimization paused. Press Enter to resume or Ctrl/Cmd + C to terminate: c
```

Serving tar.gz Files from Node.js

REST API: allows client to get access server data

API to List Plugins

"get" method in REST to retrieve information

```
app.get('/api/algorithms', (req, res) => {
  res.send(algorithms);
});
```

API to Provide Download URL

```
app.get('/api/url/algorithms/:id', (req, res) => {
  Sample download URL
  http://localhost:${port}/algorithms/${req.params.id}.tar.gz
});
```

Express: backend framework that can be used to serve files
(Used to develop download URL)

```
app.use('/algorithms', express.static('algorithms'));
// Method to serve static files
```

General Plugin Installation Workflow

"badger install plugin_type plugin" to download tar.gz to hidden directory

↓
Argparse module, request.get() method to "talk" with server

↓
Decompress tar.gz file to badger plugin folder specified in config settings

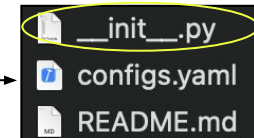
↓
Read yaml dependencies file, Commands.INSTALL from conda.cli

↓
Detect conda environment and install plugin dependencies

Plugin Installation - Local Method

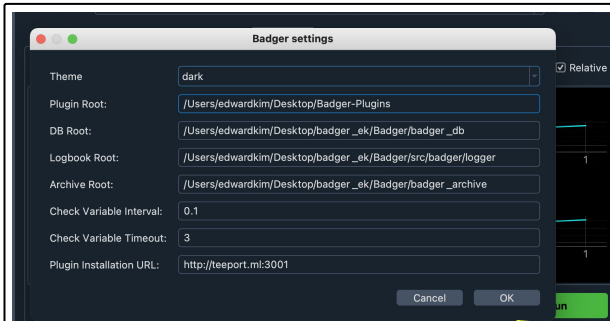
env plugin

[optimize, Environment, Extension, Interface]



Read file into histogram via `exec()` function and look at keys for plugin type

GUI Settings Panel



```
name: Badger the optimizer
version: 0.8+27_g0549d5b_dirty
plugin root: /Users/edwardkim/Desktop/Badger-Plugins
database root: /Users/edwardkim/Desktop/badger_ek/Badger/badger_db
logbook root: /Users/edwardkim/Desktop/badger_ek/Badger/src/badger/logger
archive root: /Users/edwardkim/Desktop/badger_ek/Badger/badger_archive
extensions:
- xopt
```

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