

# sculpt.io

## Correct Horse Battery Staple

### Overview

sculpt.io is a 3D sandbox live sculpting utility. At its core, it allows users to interact with substrates — mostly-freeform objects. Much like a ball of clay, users can shape substrates however they wish using the provided toolbox.

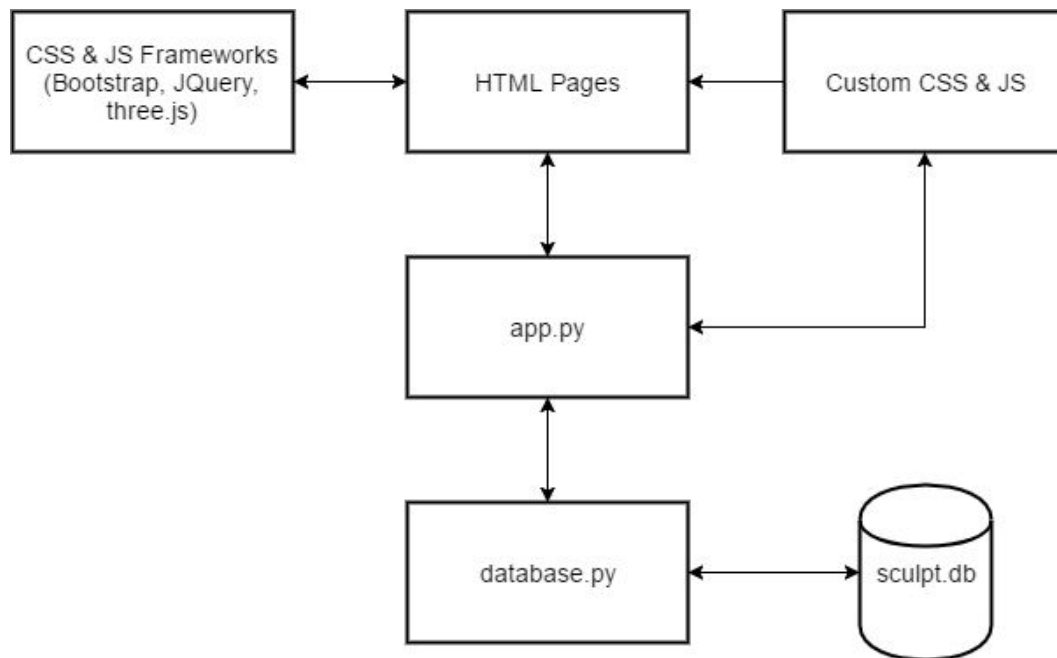
In Google Drive style, users may collaborate on projects in real-time; changes made on one client will propagate to all others through websockets. Users will be able to save and share their creations under their own user accounts.

### Component Description

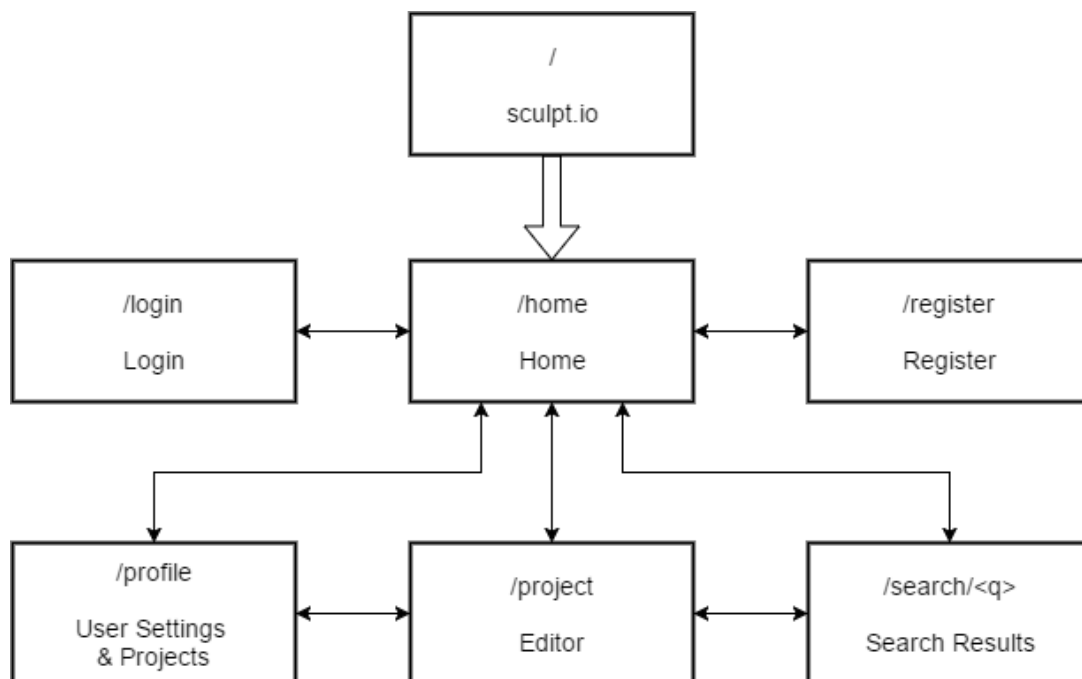
- Python files
  - app.py
    - HTTP Routes
      - GET /
        - Redirects to home
      - GET /home/
        - Renders index.html
      - POST /search/<query>/
        - Renders search.html with results of search query
      - GET /auth/
        - Renders auth.html
      - POST /login/
        - Redirects to home if credentials verified
        - Renders auth.html with error otherwise
      - POST /register/
        - Redirects to home if registered successfully
        - Renders auth.html with error otherwise
      - GET /project/
        - Renders project.html
      - GET /profile/
        - Renders profile.html
    - SocketIO listeners
      - user-connect
        - Notify other users when user connects
      - user-disconnect
        - Notify other users when user disconnects

- project-update
    - Propagates changes to other users
  - project-save
    - Saves changes to database
- database.py
  - is\_registered(username)
    - Checks if user is registered
  - login(username, password)
    - Authenticates user credentials
  - register(username, password, confirm)
    - Adds user to database
  - change\_password(username, password, new\_password)
    - Changes user password
  - get\_projects()
    - Gets all projects
  - get\_projects\_by\_keyword(keyword)
    - Gets all projects with a given keyword
  - get\_projects\_by\_user(username)
    - Gets all projects a user has contributed to
  - create\_project(project)
    - Creates project
  - save\_project(project\_id, project)
    - Saves a project to the database
  - delete\_project(project\_id)
    - Deletes a project
- HTML Templates
  - index.html
    - Basic overview
    - Link to a login/register page
    - Search by keyword, creation/modification time, rating, author
      - GET /search/
  - search.html
    - List of results from a search
    - Button to import substrate into a new project
  - auth.html
    - Login and register forms
      - POST /login/ or /register/
  - project.html
    - HTML5 canvas and JavaScript (!! ) needed to actually create substrates
  - profile.html
    - User settings (password change form)
    - List of projects user has contributed to

## Component Map



## Site Map



## Database Schema (MongoDB)

- sculpt-db
  - users
    - username
    - passhash
      - SHA256 or similar hash
  - projects
    - project\_name
    - creator
      - Original contributor
    - created
      - Time of creation
    - contributors
      - List of all users who have contributed to the project
    - last\_modified
      - Time of last modification
    - project\_data
      - List of points to render cubes and other metadata

## Task Delegation

- Kenneth — JavaScript and HTML5 Canvas
- Misha (Project Manager) — Flask app
- Nick — JavaScript and MongoDB
- James — Frontend design and websockets

## Timeline - soon™

- 5/15 — Basic server/client structure setup
- 5/18 — Database structure and user accounts
- 5/22 — Basic socket interfacing setup
- 5/29 — Sculpting working, searching working
- 6/5 — Debugging
- 6/12 — Due date

# Style Guide

- We use the official PEP 8 conventions as our style guide
- Basic Rules:
  - Variable & Function Names: lowercase\_underscored
  - Class Names: CapitalizedCamelcased
  - Math: operators & operands separated by spaces (ex.  $x = 5 * (x + 3)$ )
  - Two lines between every function definition
  - Imports on separate lines
  - Comments must have a space following the pound sign
  - Lines should be no longer than 79 characters
  - Line wrapping requires hanging indents
  - Literal strings should use single quotes