



# Secure and Remote 3D Printing

By: Tiffanie Petersen, Isaiah Thomas, Carl Mann, & Nick Contrell

# General Information:

## Meeting Dates:

- September 17th
- September 30th

## Faculty Sponsor

Dr. Sid Bhattacharyya

## Client

Mike C Newton

# Milestone 1



1. Investigative tools
  - a. Django web development, CAD (3D modeling)
2. Hello World demos
  - a. Upload and Home web pages
3. Requirement Document, Design Document, Test Plan
4. Resolve Technical Challenges
  - a. Django framework, Ender-3, G-code and 3D modeling
5. Collaboration Tools
  - a. Google drive (docs, slides, calendar), Discord, Email

# Requirements



1. Security
  - a. SQL Query, Cross Site Forgery Protection, DoS Protection, Exterior File Storage, File Hashing, User Privileges, Protect User Information
2. User Interface
  - a. Home Page, User Registration, Admin Approvals, Mobile Friendly, Navigation Bar, Login page, Submit button
3. File Uploading
  - a. File Information, File Limitations, Upload Directory

# Requirements Cont.



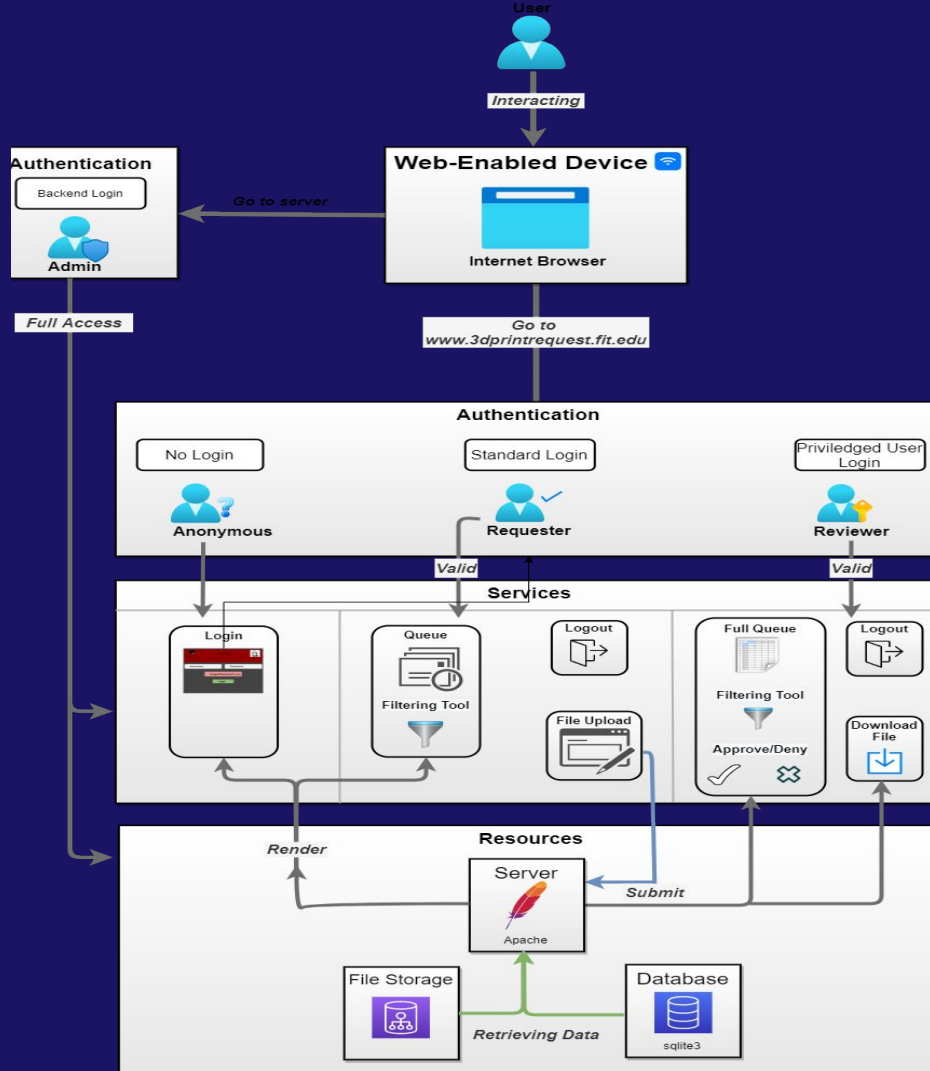
## 4. File Queue

- a. Queue Page (admin/user), Admin Approval/Rejection, Removal of projects (admin/user)

## 5. Backend & Site Deployment

- a. Robots.txt, Domain Registration, Deploying web server, Forwarding requests, Enabling SSL/HTTPS

# Architecture Diagram



# Terminal Running Django

```
L$ python manage.py runserver
Watching for file changes with StatReloader
Performing system checks ...

System check identified no issues (0 silenced).
October 04, 2021 - 19:27:15
Django version 3.2.7, using settings 'SeniorDesign.settings'
Starting development server at http://127.0.0.1:8000/
Quit the server with CONTROL-C.
AnonymousUser
[04/Oct/2021 19:27:22] "GET / HTTP/1.1" 200 236
[04/Oct/2021 19:27:31] "GET /admin/ HTTP/1.1" 302 0
[04/Oct/2021 19:27:31] "GET /admin/login/?next=/admin/ HTTP/1.1" 200 2214
[04/Oct/2021 19:27:31] "GET /static/admin/css/nav_sidebar.css HTTP/1.1" 304 0
[04/Oct/2021 19:27:31] "GET /static/admin/css/base.css HTTP/1.1" 304 0
[04/Oct/2021 19:27:31] "GET /static/admin/css/login.css HTTP/1.1" 304 0
[04/Oct/2021 19:27:31] "GET /static/admin/js/nav_sidebar.js HTTP/1.1" 304 0
[04/Oct/2021 19:27:31] "GET /static/admin/css/responsive.css HTTP/1.1" 304 0
[04/Oct/2021 19:27:32] "GET /static/admin/css/fonts.css HTTP/1.1" 304 0
[04/Oct/2021 19:27:32] "GET /static/admin/fonts/Roboto-Light-webfont.woff HTTP/1.1" 304 0
[04/Oct/2021 19:27:32] "GET /static/admin/fonts/Roboto-Regular-webfont.woff HTTP/1.1" 304 0
[04/Oct/2021 19:27:36] "POST /admin/login/?next=/admin/ HTTP/1.1" 302 0
[04/Oct/2021 19:27:36] "GET /admin/ HTTP/1.1" 200 4929
[04/Oct/2021 19:27:36] "GET /static/admin/css/dashboard.css HTTP/1.1" 200 380
[04/Oct/2021 19:27:36] "GET /static/admin/img/icon-changelink.svg HTTP/1.1" 200 380
[04/Oct/2021 19:27:36] "GET /static/admin/img/icon-addlink.svg HTTP/1.1" 200 331
[04/Oct/2021 19:27:36] "GET /static/admin/img/icon-deletelink.svg HTTP/1.1" 200 392
[04/Oct/2021 19:27:36] "GET /static/admin/fonts/Roboto-Bold-webfont.woff HTTP/1.1" 304 0
```

# Admin Page

Django administration

WELCOME, SENIOR. [VIEW SITE](#) / [CHANGE PASSWORD](#) / [LOG OUT](#)

## Site administration

### AUTHENTICATION AND AUTHORIZATION

#### Groups

[+ Add](#) [✎ Change](#)

#### Users

[+ Add](#) [✎ Change](#)

### UPLOAD

#### Upload\_models

[+ Add](#) [✎ Change](#)

## Recent actions

### My actions

[+ upload\\_model object \(2\)](#)  
Upload\_model

[✗ upload\\_model object \(1\)](#)  
Upload\_model

[+ upload\\_model object \(1\)](#)  
Upload\_model



# Upload Page

Title:

Testing Description

Description:

Testing Summary

Summary:

Upload:  image\_to\_be\_uploaded.jpg

# Successful Upload (Admin View)

Django administration

WELCOME, SENIOR. [VIEW SITE](#) / [CHANGE PASSWORD](#) / [LOG OUT](#)

Home › Upload › Upload\_models › upload\_model object (7)

AUTHENTICATION AND AUTHORIZATION

Groups

+ Add

Users

+ Add

UPLOAD

Upload\_models

+ Add

«

Change upload\_model

upload\_model object (7)

Title:

BlackScreenTest

Description:

Testing

Summary:

123

Upload:

Currently: user\_uploads/2021/10/04/image\_to\_be\_uploaded.jpg

Change: 

Browse...

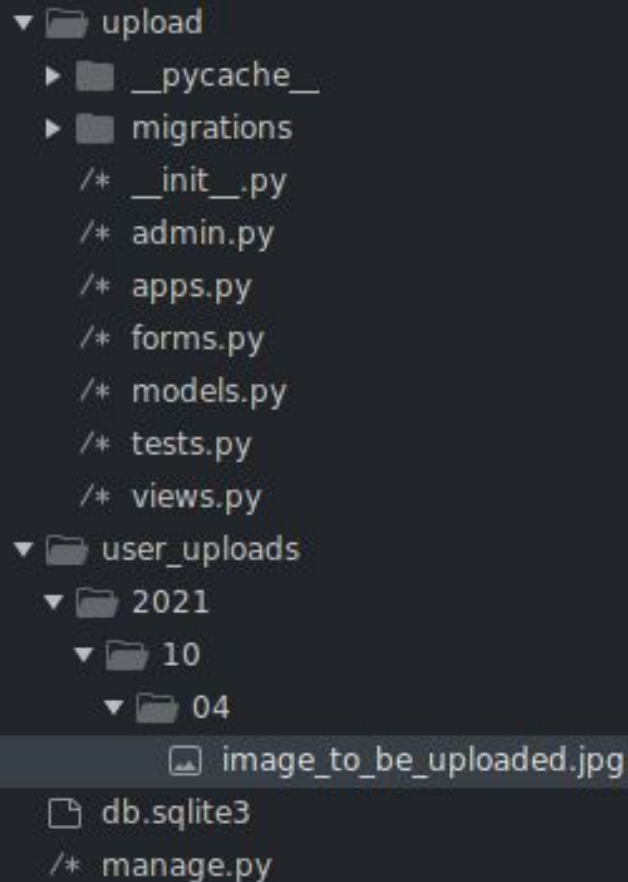
 No file selected.

Delete

Save and add another

Save and continue

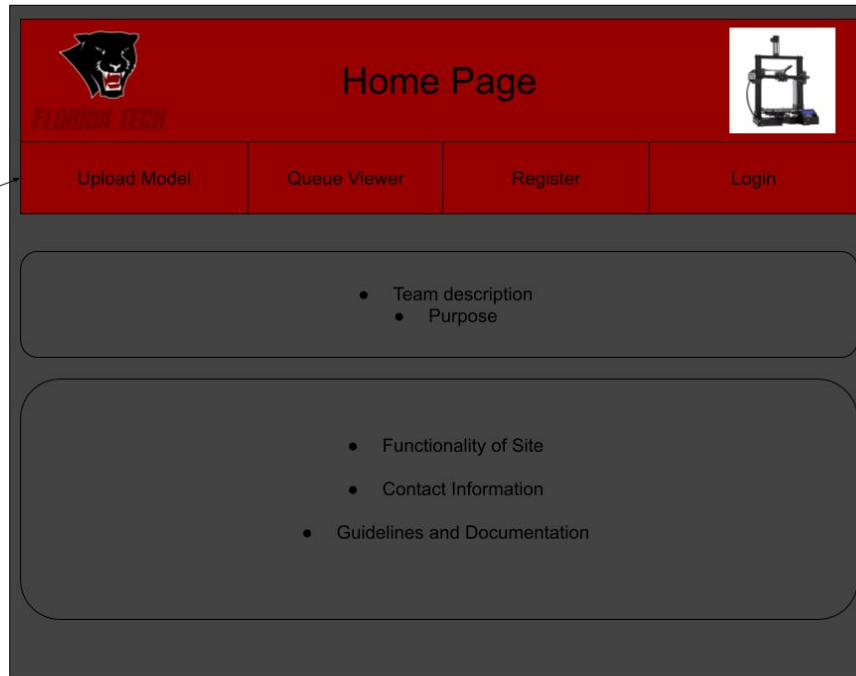
# Backend For Upload



The screenshot shows a file explorer window with a dark theme. The file tree is expanded to show the 'upload' directory. Inside 'upload', there are subdirectories '\_\_pycache\_\_' and 'migrations', and several Python files: '\_\_init\_\_.py', 'admin.py', 'apps.py', 'forms.py', 'models.py', 'tests.py', and 'views.py'. Below these is the 'user\_uploads' directory, which contains a '2021' directory, which in turn contains a '10' directory, which contains a '04' directory. The file 'image\_to\_be\_uploaded.jpg' is selected and highlighted in the '04' directory. At the bottom of the file tree, there are files 'db.sqlite3' and 'manage.py'.

- ▼ upload
  - ▶ \_\_pycache\_\_
  - ▶ migrations
    - /\* \_\_init\_\_.py
    - /\* admin.py
    - /\* apps.py
    - /\* forms.py
    - /\* models.py
    - /\* tests.py
    - /\* views.py
  - ▼ user\_uploads
    - ▼ 2021
      - ▼ 10
        - ▼ 04
          - image\_to\_be\_uploaded.jpg
  - db.sqlite3
  - /\* manage.py

# Home Page Mock-up




Navbar


Text Box and  
Images

Text Box and  
Images

# Login Page Mock-up



FLORIDA TECH

Login Page

Upload Model

Queue Viewer

Register

Login


Username

Password


Forgot Password? (Link)

Login

# Registration Page Mock-up



## Registration Page



Upload Model	Queue Viewer	Register	Login
--------------	--------------	----------	-------

First Name

Last Name



Username

Email

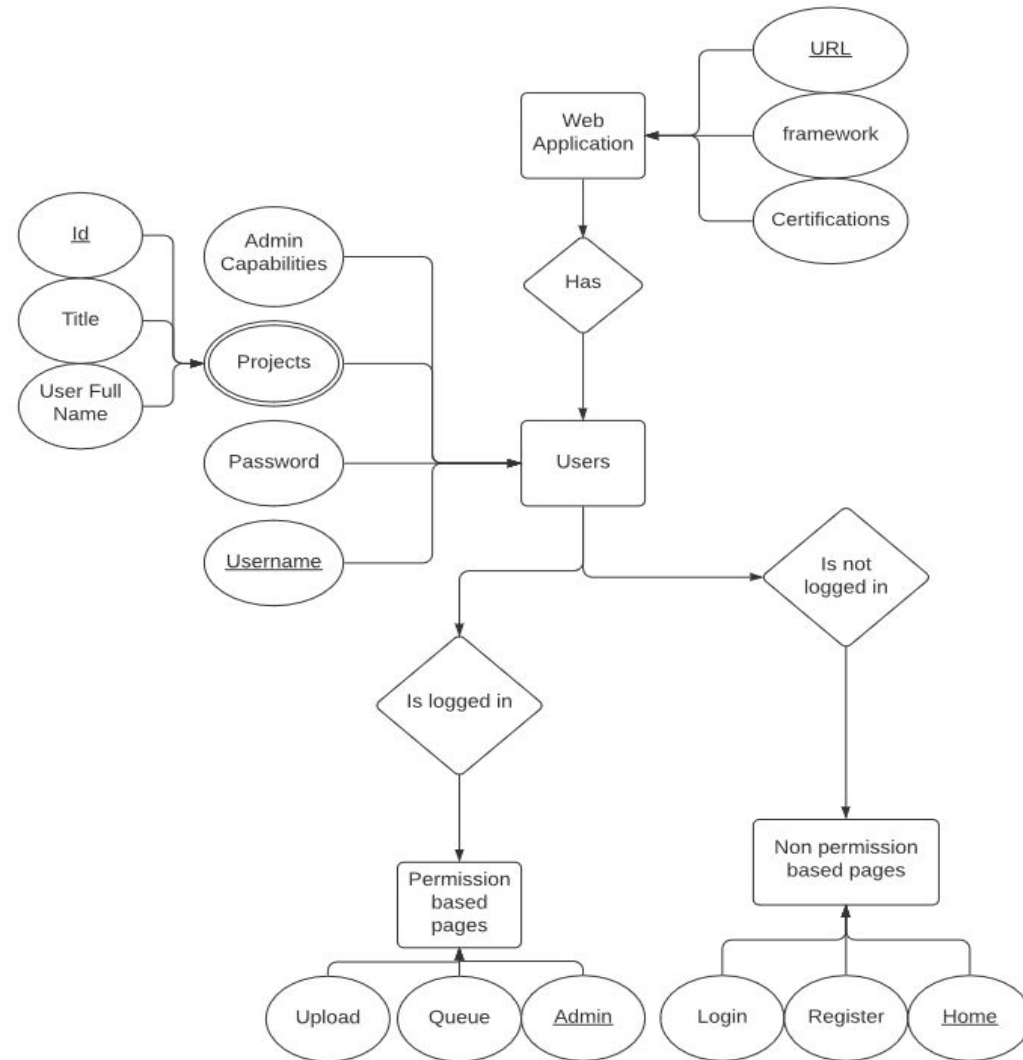
Password

Submit

# Queue Page Mock-up

<div><div>Queue Page</div></div>			
<div>Upload ModelQueue ViewerRegisterLogin</div>			
Username	Email	Upload Name	Queue Position
JaneDoe	janedoe@gmail.com	JanesFile.gcode	1
JoeShcmo	joesh@gmail.com	JoesSecretPrint.gcode	2
...	...	...	...
...	...	...	...
DrOc	droc@gmail.com	drocprint.gcode	11

# Database ER Diagram



Entity Table:

Web Application

Users

Permission Based Pages

Non-Permission Based Pages

Table Attributes:

web\_app(primary key: url, framework, certifications)

users(primary key: username, password, multi-valued: projects, admin capabilities)

perm\_pages(primary key: admin, queue, upload)

non\_perm\_pages(primary key: home, login, register)



# Test Cases:



1. Functionality Tests:
  - a. Network Connectivity
  - b. User Creation
  - c. Web Page Restrictions
2. Security Tests:
  - a. Cross-Site Scripting
  - b. Input Sanitation
  - c. DoS Protections

# Milestone 2



1. Implement, test & demo *front end of the web application*
2. Implement, test & demo *user features for uploads and creating accounts*
3. Implement, test & demo *Admin account abilities*

**Any  
Questions?**

**Thank You!**