Sprint 1

Deployment Environment

Web Server:
ec2-18-216-214-86.us-east-2.compute.amazonaws.com

Database:
ec2-18-216-214-86.us-east-2.compute.amazonaws.com

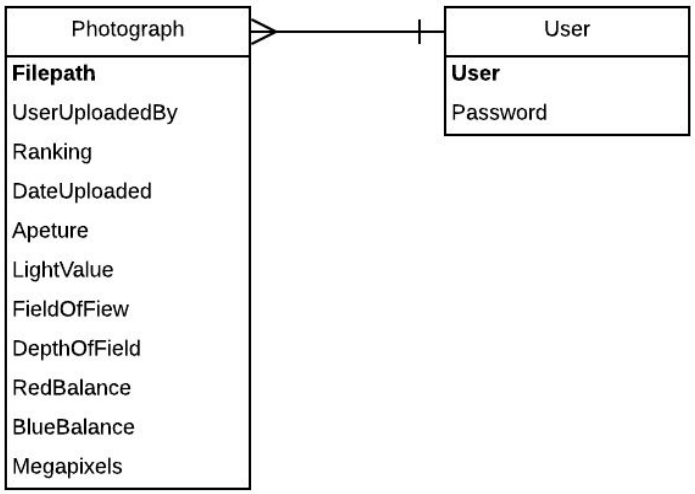
Credentials for the db are in the web server under /var/www/inc

Functional Requirements

- Submit Photographs
    - User must be able to select files to upload
    - Uploaded files must be ranked by the machine learning algorithm and have relevant information uploaded to the database
- Search
    - User must be able to input SQL queries into the database and have results returned
- Login
    - User must be able to login into the system when correct credentials are provided
    - User must not be able to access site content when not logged in.

Database Design

ERD



DDL

```
CREATE TABLE User (
    User varchar(64) NOT NULL,
    Pass varchar(128) NOT NULL,
    PRIMARY KEY (User)
);

CREATE TABLE Photograph (
    Filepath varchar(260) NOT NULL,
    UserUploadedBy varchar(64) NOT NULL REFERENCES User(User),
    Ranking int NOT NULL,
    Apeture varchar(10),
    LightValue float,
    FieldOfView float,
    DepthOfField float,
    RedBalance float,
    BlueBalance float,
    Megapixels float,
    DateUploaded datetime DEFAULT CURRENT_TIMESTAMP
);
```

Stubbed Files

User Interface

NOTE: User interface pages are largely finished. The styling is not final but all pages are accessible and have core functionality implemented.
login.html: HTML page for logging into the database. Information from the form is sent to login.php to validate the user.

```
<!DOCTYPE html>
<html lang="en">
<head>
      <title>Login</title>
      <meta charset="UTF-8">
      <meta name="viewport" content="width=device-width, initial-scale=1">
      <link rel="icon" type="image/png" href="images/icons/favicon.ico"/>
      <link rel="stylesheet" type="text/css"
href="vendor/bootstrap/css/bootstrap.min.css">
      <link rel="stylesheet" type="text/css"
href="fonts/font-awesome-4.7.0/css/font-awesome.min.css">
      <link rel="stylesheet" type="text/css"
```

```
href="fonts/Linearicons-Free-v1.0.0/icon-font.min.css">
	<link rel="stylesheet" type="text/css"
href="vendor/animate/animate.css">
	<link rel="stylesheet" type="text/css"
href="vendor/css-hamburgers/hamburgers.min.css">

	<link rel="stylesheet" type="text/css"
href="vendor/animsition/css/animsition.min.css">
	<link rel="stylesheet" type="text/css"
href="vendor/select2/select2.min.css">
	<link rel="stylesheet" type="text/css"
href="vendor/daterangepicker/daterangepicker.css">
	<link rel="stylesheet" type="text/css" href="css/util.css">
	<link rel="stylesheet" type="text/css" href="css/main.css">
</head>
<body>
	<div class="limiter">
		<div class="container-login100">
			<div class="wrap-login100 p-t-50 p-b-90">
				<form class="login100-form validate-form flex-sb
flex-w" action="login.php" method="post">
					<span class="login100-form-title p-b-51">
						Login
					</span>


					<div class="wrap-input100 validate-input
m-b-16" data-validate = "Username is required">
						<input class="input100" type="text"
name="username" placeholder="Username">
						<span class="focus-input100"></span>
					</div>


					<div class="wrap-input100 validate-input
m-b-16" data-validate = "Password is required">
						<input class="input100" type="password"
name="password" placeholder="Password">
						<span class="focus-input100"></span>
					</div>

					<div class="container-login100-form-btn
```

```
m-t-17">
                                    <button class="login100-form-btn">
                                          Login
                                    </button>
                                </div>
                            </form>
                        </div>
                    </div>
            </div>
            <script src="vendor/jquery/jquery-3.2.1.min.js"></script>
            <script src="vendor/animsition/js/animsition.min.js"></script>
            <script src="vendor/bootstrap/js/popper.js"></script>
            <script src="vendor/bootstrap/js/bootstrap.min.js"></script>
            <script src="vendor/select2/select2.min.js"></script>
            <script src="vendor/daterangepicker/moment.min.js"></script>
            <script src="vendor/daterangepicker/daterangepicker.js"></script>
            <script src="vendor/countdowntime/countdowntime.js"></script>
            <script src="js/main.js"></script>
</body>
</html>
```

index.php: Returns images from search and allows for images to be uploaded

```
<?php include "../inc/dbinfo.inc"; ?>
<?php
    session_start();

    if (!$_COOKIE['username']){
        header("location:
http://ec2-18-216-214-86.us-east-2.compute.amazonaws.com/login.html");
    }
?>

<!DOCTYPE html>
<html lang="en">
<head>
      <title>Login</title>
      <meta charset="UTF-8">
      <meta name="viewport" content="width=device-width, initial-scale=1">
      <link rel="icon" type="image/png" href="images/icons/favicon.ico"/>
      <link rel="stylesheet" type="text/css"
href="vendor/bootstrap/css/bootstrap.min.css">
```

```
      <link rel="stylesheet" type="text/css"
href="fonts/font-awesome-4.7.0/css/font-awesome.min.css">
      <link rel="stylesheet" type="text/css"
href="fonts/Linearicons-Free-v1.0.0/icon-font.min.css">
      <link rel="stylesheet" type="text/css"
href="vendor/animate/animate.css">
      <link rel="stylesheet" type="text/css"
href="vendor/css-hamburgers/hamburgers.min.css">
      <link rel="stylesheet" type="text/css"
href="vendor/animsition/css/animsition.min.css">
      <link rel="stylesheet" type="text/css"
href="vendor/select2/select2.min.css">
      <link rel="stylesheet" type="text/css"
href="vendor/daterangepicker/daterangepicker.css">
      <link rel="stylesheet" type="text/css" href="css/util.css">
      <link rel="stylesheet" type="text/css" href="css/main.css">
</head>
<body>

<header id="header-1" class="header">
  <nav class="header-nav">
    <div class="search-button">
      <a href="#" class="search-toggle" data-selector="#header-1"></a>
    </div>
    <form action="" class="search-box">
      <input type="text" class="text search-input" placeholder="SELECT *
FROM Photograph ORDER BY Ranking" />
    </form>
  </nav>
</header>

<div class="container main">
    <div class="img-box">
    </div>
</div>

<footer>
    <a
href="http://ec2-18-216-214-86.us-east-2.compute.amazonaws.com/upload.html"
>
        Upload Images <img id="icon" border="0" alt="W3Schools"
src="iconfinder_upload2_172620.png" width="20" height="20">
```

```
    </a>
</footer
      <script src="vendor/jquery/jquery-3.2.1.min.js"></script>
      <script src="vendor/animsition/js/animsition.min.js"></script>
      <script src="vendor/bootstrap/js/popper.js"></script>
      <script src="vendor/bootstrap/js/bootstrap.min.js"></script>
      <script src="vendor/select2/select2.min.js"></script>
      <script src="vendor/daterangepicker/moment.min.js"></script>
      <script src="vendor/daterangepicker/daterangepicker.js"></script>
      <script src="vendor/countdowntime/countdowntime.js"></script>
    <script src="js/main.js"></script>

</body>
</html>
```

upload.php: Provides user a form where they can upload images. User is redirected if they are not logged in.

```
<?php include "../inc/dbinfo.inc"; ?>
<?php
    session_start();

    if (!$_COOKIE['username']){
        header("location:
http://ec2-18-216-214-86.us-east-2.compute.amazonaws.com/login.html");
    }
?>

<!DOCTYPE html>
<html lang="en">
<head>
      <title>Login</title>
      <meta charset="UTF-8">
      <meta name="viewport" content="width=device-width, initial-scale=1">
      <link rel="icon" type="image/png" href="images/icons/favicon.ico"/>
      <link rel="stylesheet" type="text/css"
href="vendor/bootstrap/css/bootstrap.min.css">
      <link rel="stylesheet" type="text/css"
href="fonts/font-awesome-4.7.0/css/font-awesome.min.css">
      <link rel="stylesheet" type="text/css"
href="fonts/Linearicons-Free-v1.0.0/icon-font.min.css">
      <link rel="stylesheet" type="text/css"
```

```
href="vendor/animate/animate.css">
      <link rel="stylesheet" type="text/css"
href="vendor/css-hamburgers/hamburgers.min.css">
      <link rel="stylesheet" type="text/css"
href="vendor/animsition/css/animsition.min.css">
      <link rel="stylesheet" type="text/css"
href="vendor/select2/select2.min.css">
      <link rel="stylesheet" type="text/css"
href="vendor/daterangepicker/daterangepicker.css">
      <link rel="stylesheet" type="text/css" href="css/util.css">
      <link rel="stylesheet" type="text/css" href="css/main.css">
</head>
<body>

<header id="header-1" class="header">
  <nav class="header-nav">
    <div class="search-button">
      <a href="#" class="search-toggle" data-selector="#header-1"></a>
    </div>
    <form action="" class="search-box">
      <input type="text" class="text search-input" placeholder="SELECT *
FROM Photograph ORDER BY Ranking" />
    </form>
  </nav>
</header>

<div class="container main">
    <div class="img-box">
    </div>
</div>

<footer>
    <a
href="http://ec2-18-216-214-86.us-east-2.compute.amazonaws.com/upload.php">
        Upload Images <img id="icon" border="0" alt="W3Schools"
src="iconfinder_upload2_172620.png" width="20" height="20">
    </a>
</footer>

      <script src="vendor/jquery/jquery-3.2.1.min.js"></script>
      <script src="vendor/animsition/js/animsition.min.js"></script>
      <script src="vendor/bootstrap/js/popper.js"></script>
```

```
      <script src="vendor/bootstrap/js/bootstrap.min.js"></script>
      <script src="vendor/select2/select2.min.js"></script>
      <script src="vendor/daterangepicker/moment.min.js"></script>
      <script src="vendor/daterangepicker/daterangepicker.js"></script>
      <script src="vendor/countdowntime/countdowntime.js"></script>
    <script src="js/main.js"></script>

</body>
</html>
```

Model Files

login.php: Checks to see if information provided from user form validates with username and password in database. Sends user to index.php if their information validates and redirects to login page if it does not.

```
<?php include "../inc/dbinfo.inc"; ?>
<?php
    session_start();

    $database =
mysqli_connect(DB_SERVER,DB_USERNAME,DB_PASSWORD,DB_DATABASE);

    if (mysqli_connect_errno()) {
        echo "Failed to connect to MySQL: " . mysqli_connect_error();
        header("Location:
http://ec2-18-216-214-86.us-east-2.compute.amazonaws.com/login.html");
        die();
    }

    $username = mysqli_real_escape_string($database, $_POST['username']);
    $password = mysqli_real_escape_string($database, $_POST['password']);
    $sql = "SELECT * FROM User WHERE User='$username' AND
Pass='$password'";

    $result = mysqli_query($database, $sql);
    $row = mysqli_fetch_array($result, MYSQLI_ASSOC);
    $active = $row['active'];

    $count = mysqli_num_rows($result);

    if($count) {
```

```
        setcookie("username", $username, time() + (86400 * 30), "/");
        header("location:
http://ec2-18-216-214-86.us-east-2.compute.amazonaws.com");
    }
    else {
        header("location:
http://ec2-18-216-214-86.us-east-2.compute.amazonaws.com/login.html");
    }
?>
```

uploadImage.php: Submits file path entered by the user to the machine learning algorithm. The file path and relevant information are uploaded to the database on success.

```
<?php include "../inc/dbinfo.inc"; ?>
<?php
    session_start();

    $database =
mysqli_connect(DB_SERVER,DB_USERNAME,DB_PASSWORD,DB_DATABASE);

    if (mysqli_connect_errno()) {
        echo "Failed to connect to MySQL: " . mysqli_connect_error();
        header("Location:
http://ec2-18-216-214-86.us-east-2.compute.amazonaws.com/login.html");
        die();
    }

    $filepath = mysqli_real_escape_string($database, $_POST['filepath']);

    //submit filepath to ML algorithm
    //$Ranking = ML()
    //$UserUploadedBy = $_COOKIE['username']
    //$RedBalance = ML()
    //$BlueBalance = ML()
    //...
    //form SQL Query from Info
    //$sql = "INSERT INTO Photograph VALUES ($filepath, $UserUploadedBy,
$RedBalance, $BlueBalance, ...);
    //mysqli_query($database, $sql);

    header("location:
http://ec2-18-216-214-86.us-east-2.compute.amazonaws.com");
```

```
?>
```

search.php: Sets cookie based on input of search form

```
<?php include "../inc/dbinfo.inc"; ?>
<?php
    session_start();

    $database =
mysqli_connect(DB_SERVER,DB_USERNAME,DB_PASSWORD,DB_DATABASE);

    //checkingfor connection error
    if (mysqli_connect_errno()) {
        echo "Failed to connect to MySQL: " . mysqli_connect_error();
        header("Location:
http://ec2-18-216-214-86.us-east-2.compute.amazonaws.com");
        die();
    }

    //setting data from search form as a cookie
    $search = mysqli_real_escape_string($database, $_POST['search']);
    setcookie("search", $search, time() + (86400 * 30), "/");

    //going back to header
    header("location:
http://ec2-18-216-214-86.us-east-2.compute.amazonaws.com");
?>
```

index.php: Portion of index.php code where images are returned based on the search cookie specified by the user from the search form.

```
<?php
    $query = $_COOKIE['search'];
    if (!$_COOKIE['search']) {
        $query = "select Filepath,Ranking from Photograph ORDER BY
Ranking";
    }
    $result = mysqli_connect(DB_SERVER,DB_USERNAME,DB_PASSWORD);
    mysqli_select_db($result,DB_DATABASE) or die("Could not select the
databse." .mysqli_error());
    $image_query = mysqli_query($result,$query);
    while($rows = mysqli_fetch_array($image_query))
    {
```

```
        $ranking = $rows['Ranking'];
        $img_src = $rows['Filepath'];
        echo "<div class='img-block'>";
        echo "<div class='img-text'>$ranking</div>";
        echo "<img src='$img_src' alt='image' title='$ranking' width=300
height=200 class='img-responsive'>";
        echo "</div>";
    }
?>
```

Controller

MLTrain.py: Will be used to build and train the models used in the ranking of images.

```
#import tensorflow/keras
#define model as global

def trainModel():
    #takes the global model object and trains it, saving it to a defined file path.
Returns 0 if no errors
    return 0
```

normalizePictures.py: Will be used to get photos of different resolutions and metadata formatting into a standard format to be pumped into the ML model.

```
def normalizepicture(filepath):

    #this will take in a filepath and generate a new image that fits the size required
by the ML model, it will return a file path

    outputFilepath = ''

    return outputFilepath
```

rankPhotos.py: Will be used to generate the ranked list of images. Will load the pre-trained model before beginning and will sort all the images by using the output of the ML model as a comparison operator in a sorting algorithm.

```
#import tensorflow/keras
```

```
#gather model from stored filepath

def sortData(inputfilepath, outputfilepath):
    #runs ML model against the dataset of photos, stores sorted data in the output file
path.
    return 0
```

Languages

- HTML/CSS
    - Used for frontend on the server
    - Everyone on the team has a solid understanding of the language
- JavaScript
    - Used for frontend on the server
    - Everyone on the team has a solid understanding of the language
- PHP
    - Used for backend on the server
    - Everyone on the team has a solid understanding of the language
- SQL
    - Used to store and access information on the server
    - Everyone on the team has a solid understanding of the language
- Python
    - Used for the implementation of the machine learning algorithm
    - Albert and Eli have limited Python knowledge, Jack is proficient
- Skill Gaps
    - Python is a language most members of the team are inexperienced with. As a result Jack will be doing most of the work in this language.