Project Report

IFT 458 - PD 1

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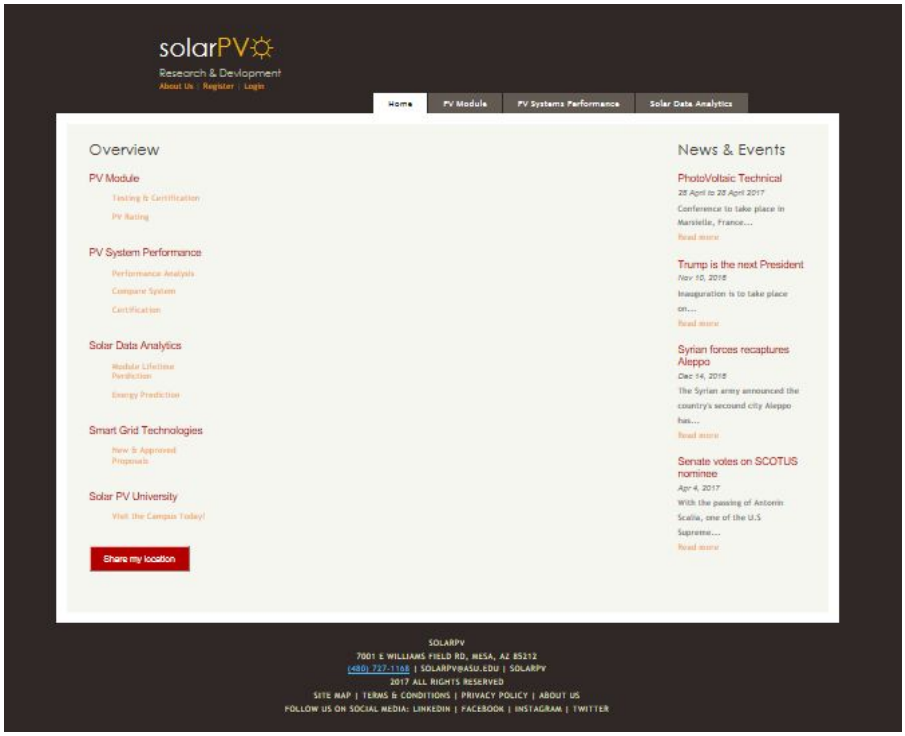
Introduction

The purpose of Project Deliverable 1 was to implement the given wireframe using HTML5, CSS, JavaScript, and jQuery to do the front-end design. We chose the solarPV wireframe, modifying the design to be user friendly and appealing. The following report will describe the process taken to accomplish the design, the knowledge we obtained, challenges faced and overcame, and how the design can be improved.

Method

We began the project by coding the Home Page using HTML and CSS, leaving out the featured contents, then used it as a template for the remainder of the pages. This is displayed in figure 1 below.

Figure 1.



The basic design allows the user to easily navigate the site. The main horizontal navigation bar is divided in tabs located on the top of the page under the logo. As shown in the image above, depending on the user's location on the site, the navigation-tab will change color. This was accomplished by using the "selected" attribute. The logo is also a clickable link which redirects the user to the home page. The rest of the design code is presented in figure 2.

Figure 2.

```
<body>
  <div id="main">
    <div id="header">
      <div id="logo">
        <div id="logo_text">
          <h1><a href="solarPV_Home.html">solar<span class="logo_colour">PV<span>&#9788;</span></span></a></h1>
          <h2>Research & Devlopment</h2>
        </div>
      </div>

      <div id="menubar">
        <ul id="menu">
          <li class="selected"><a href="solarPV_Home.html">Home</a></li>
          <li><a href="solarPV_Module.html">PV Module</a></li>
          <li><a href="solarPV_Systems.html">PV Systems Performance</a></li>
          <li><a href="solarPV_Data.html">Solar Data Analytics</a></li>
          <li><a href="solarPV_Contact.html">Contact Us</a></li>
          <li><a href="solarPV_Register.html">Register</a></li>
          <li><a href="solarPV_Login.html">Login</a></li>
        </ul>
      </div>
    </div>

    <div id="site_content">
        <div class="sidebar_left">
            <h1>Overview</h1>

            <h4>PV Module</h4>
            <ul>
                <li><a href="solarPV_Module.html">Testing & Certification</a></li>
                <li><a href="solarPV_Module.html">PV Rating</a></li>
            </ul>

            <h4>PV System Performance</h4>
            <ul>
                <li><a href="solarPV_Systems.html">Performance Analysis</a></li>
                <li><a href="solarPV_Systems.html">Compare System</a></li>
                <li><a href="solarPV_Systems.html">Certification</a></li>
            </ul>

            <h4>Solar Data Analytics</h4>
            <ul>
                <li><a href="solarPV_Data.html">Module Lifetime Perdiction</a></li>
                <li><a href="solarPV_Data.html">Energy Prediction</a></li>
```

The left sidebar is the extended navigation bar that includes clickable links to their respective pages. Both sidebars were contained using divisions that have classes which contain attributes of left-padding or right-padding. Each page has the Share my location button which was designed to prompt the user to share their geolocation when selected. If the user chooses to share their location, there will be a display of longitude, latitude, and a map of current location (Figure 3 - 5). This button is located in the same position on every html page, under the left-side bar, shown in Figure 3. Overall, this feature was accomplished using JavaScript shown in Figure 6. There was also lots of CSS added to change font attributes and spacing depend on the html tags used.

Figure 3.

```
<div id="site_content">
    <div class="sidebar_left">
        <h1>Overview</h1>

        <h4>PV Module</h4>
        <ul>
            <li><a href="solarPV_Module.html">Testing & Certification</a></li>
            <li><a href="solarPV_Module.html">PV Rating</a></li>
        </ul>

        <h4>PV System Performance</h4>
        <ul>
            <li><a href="solarPV_Systems.html">Performance Analysis</a></li>
            <li><a href="solarPV_Systems.html">Compare System</a></li>
            <li><a href="solarPV_Systems.html">Certification</a></li>
        </ul>

        <h4>Solar Data Analytics</h4>
        <ul>
            <li><a href="solarPV_Data.html">Module Lifetime Perdiction</a></li>
            <li><a href="solarPV_Data.html">Energy Prediction</a></li>
        </ul>

        <h4>Smart Grid Technologies</h4>
        <ul>
            <li><a href="solarPV_tech.html">New & Approved Proposals</a></li>
        </ul>

        <h4>Solar PV University</h4>
        <ul>
            <li><a href="solarPV_Contact.html">Visit the Campus Today!</a></li>
        </ul>

        <p><button onclick="geoFindMe()" class="button_location">Share my location</button></p>

    </div>
```

Figure 4.

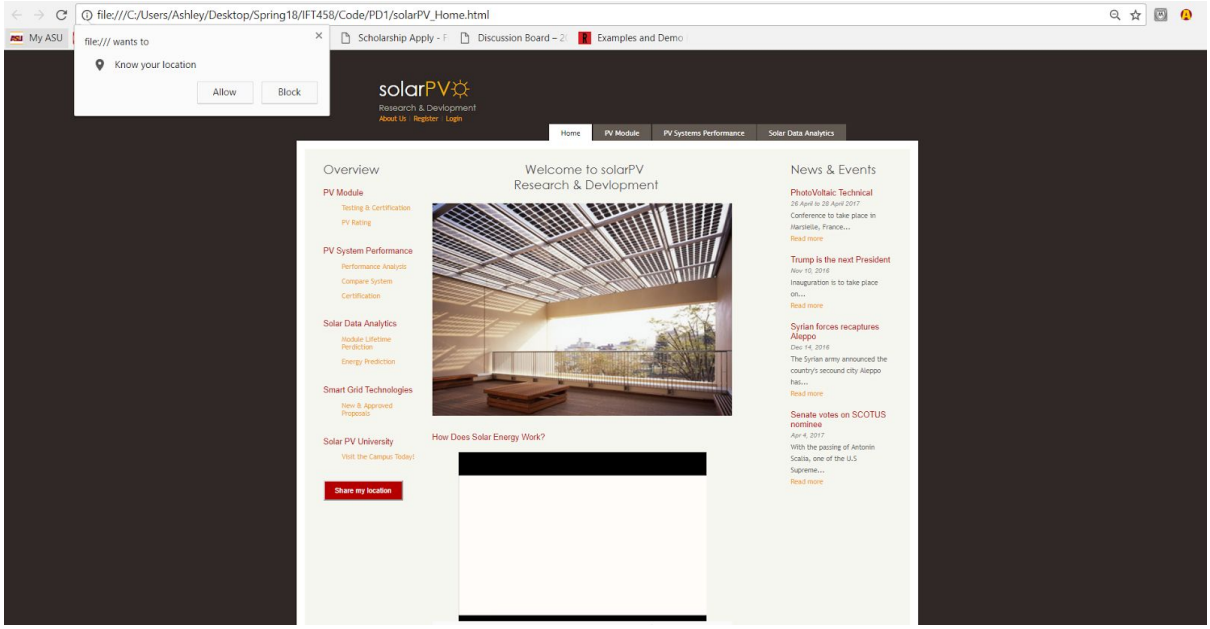


Figure 5.

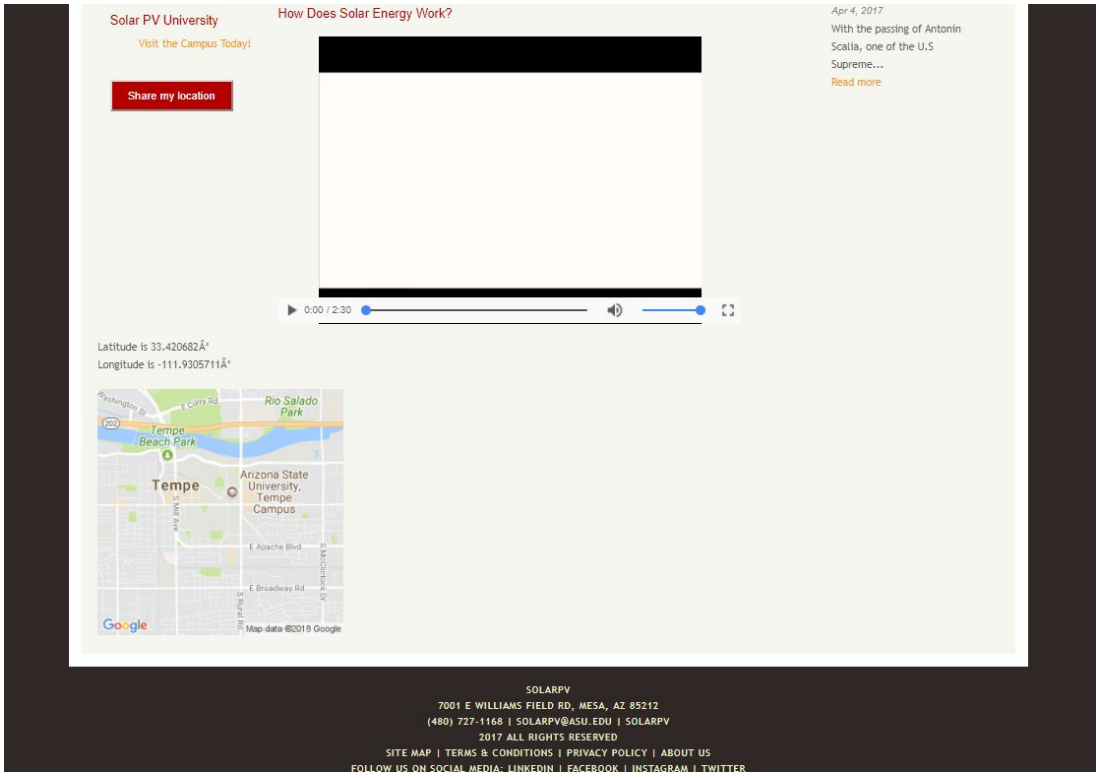


Figure 6.

```
function geoFindMe() {
  var output = document.getElementById("out");

  if (!navigator.geolocation){
    output.innerHTML = "<p>Geolocation is not supported by your browser</p>";
    return;
  }

  function success(position) {
    var latitude  = position.coords.latitude;
    var longitude = position.coords.longitude;

    output.innerHTML = '<p>Latitude is ' + latitude + '° <br>Longitude is ' + longitude + '°</p>';

    var img = new Image();
    img.src = "https://maps.googleapis.com/maps/api/staticmap?center=" + latitude + "," + longitude + "&zoom=13&size=300x300&sensor=false";

    output.appendChild(img);
  }

  function error() {
    output.innerHTML = "Unable to retrieve your location";
  }

  output.innerHTML = "<p>Locating…</p>";

  navigator.geolocation.getCurrentPosition(success, error);
}
```

The footer code in figure 7 contains the company name, address, phone number, email, active link to the homepage, and active links to social media. It also contains dead links to site map, terms & conditions, and privacy policy which were added for completion of wireframe requirements.

Figure 7.

```
<div id="footer">
  <p></p>
  <p>solarPV</p>
  <p>7001 E Williams Field Rd, Mesa, AZ 85212</p>
  <p>(480) 727-1168 | solarPV@asu.edu | <a href="solarPV_Home.html">solarPV</a></p>
  <p>2017 All Rights Reserved </p>
  <p><a href="#">Site Map</a> | <a href="#">Terms & Conditions</a> | <a href="#">Privacy Policy</a> | <a href="#">About Us</a
  <p>Follow Us on Social Media: <a href="http://www.LinkedIn.com">LinkedIn</a> | <a href="http://www.Facebook.com">Facebook</
</div>
```

FIgure 8 shows the finished homepage. This design was simple, with a picture of a home which has solar panels and a video with audio which describes solar energy and why it is beneficial. This page was intentionally left with minimal text in order to look visually appealing and allow the user to use the extended navigation (on left) to choose the information they want to view. The About Us, Register, and Login links were intentionally separated from the

Navigation bar and placed under the logo to create separation between the main content and the company's supplemental optional features.

Figure 8.

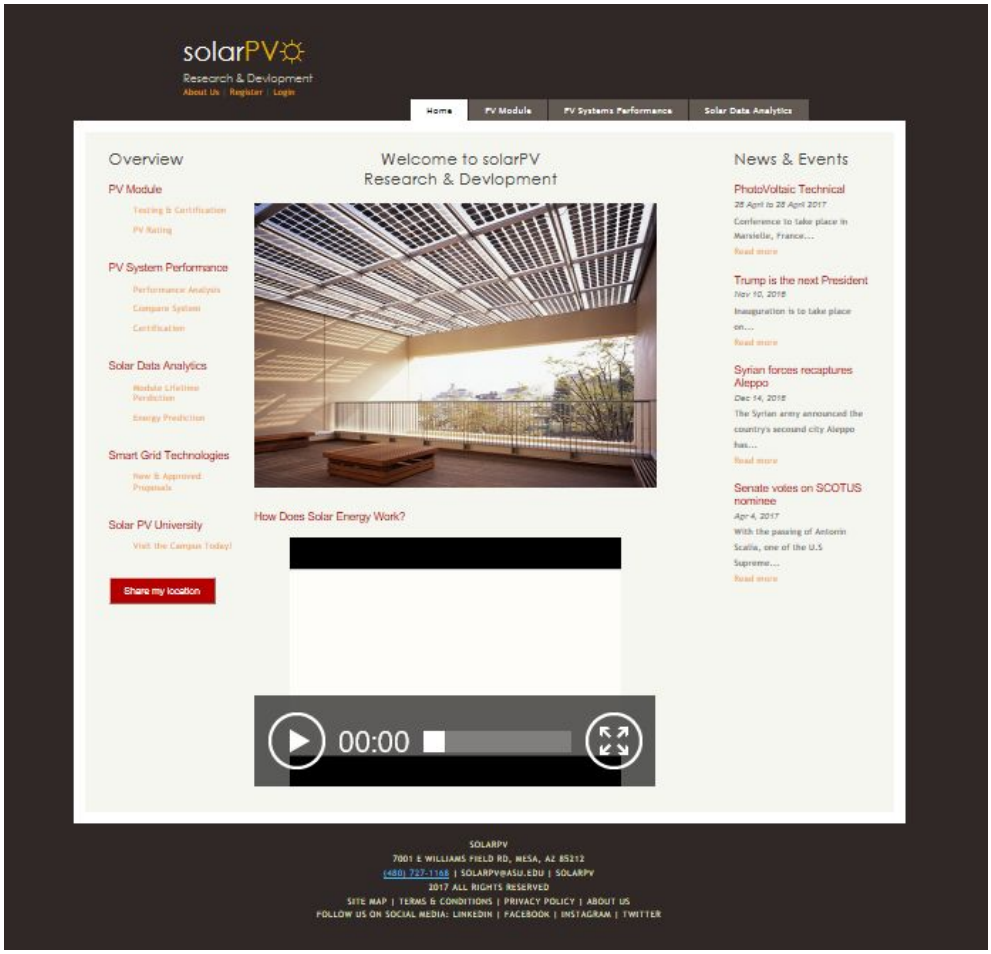
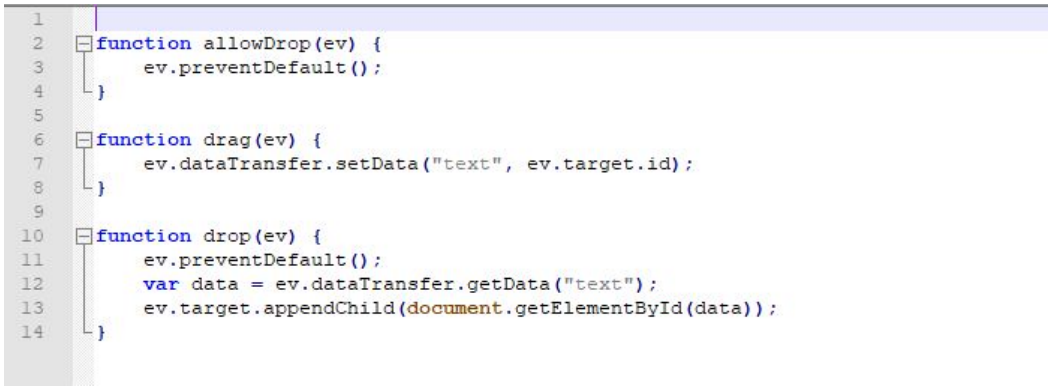


Figure 9 shows the finished PV Module Page. This page contains drag and drop capabilities. The pictures are intentionally left out of order and place to the empty rectangles to allow the user to build the pyramid of the various tiers that describe PV rating in the text below. This was done using the solarPV_MOD_Drag.js page shown in Figure 6. The pictures were sized

using in line height and width attributes and contain a ID of drag (1,2, or 3). The pictures also contain the JS attributes that allow the picture to be draggable using a Boolean value of true and the JS function that allows them to start to be dragged. The rectangles have an ID of div(1,2,3) which is implemented in as CSS in the solarPV_Index.css page (Figure 11) that gives them their size and padding. The rectangles also contain the JS attributes that call the functions and allow the pictures to be dropped. There is also pictures and supplemental text that supports the theme of the page. In order for the Text after the PV Rating headline to be aligned with the middle feature content, We created a container using a div a class with an attribute of padding equal to the left sidebar. This is done on all the pages.

Figure 9.



```
1
2   function allowDrop(ev) {
3       ev.preventDefault();
4   }
5
6   function drag(ev) {
7       ev.dataTransfer.setData("text", ev.target.id);
8   }
9
10  function drop(ev) {
11      ev.preventDefault();
12      var data = ev.dataTransfer.getData("text");
13      ev.target.appendChild(document.getElementById(data));
14  }
```

Figure 10.

```
106     <div class="pad_content" id="dragdrop">
107     <h2>PV Rating</h2>
108
109
110         <p>Drag the images into the empty rectangles to form the pyramid:</p>
111         <div class="sidebar_left">
112         <div id="div1" ondrop="drop(event)" ondragover="allowDrop(event)"></div>
113         <br />
114         <div id="div2" ondrop="drop(event)" ondragover="allowDrop(event)"></div>
115         <br />
116         <div id="div3" ondrop="drop(event)" ondragover="allowDrop(event)"></div>
117         <br />
118         </div>
119         <div class="sidebar">
120         <img id="drag2" src="images/module_middle.png" alt="middle tri" draggable="true"
            ondragstart="drag(event)" width="350" height="100">
121         <br /><br /><br />
122         <img id="drag3" src="images/module_bottom.png" alt="bottom tri" draggable="true"
            ondragstart="drag(event)" width="350" height="100">
123         <br /><br /><br />
124         <img id="drag1" src="images/module_top.png" alt="top tri" draggable="true" ondragstart="drag(event)"
            width="350" height="100">
125         </div>
```

Figure 11

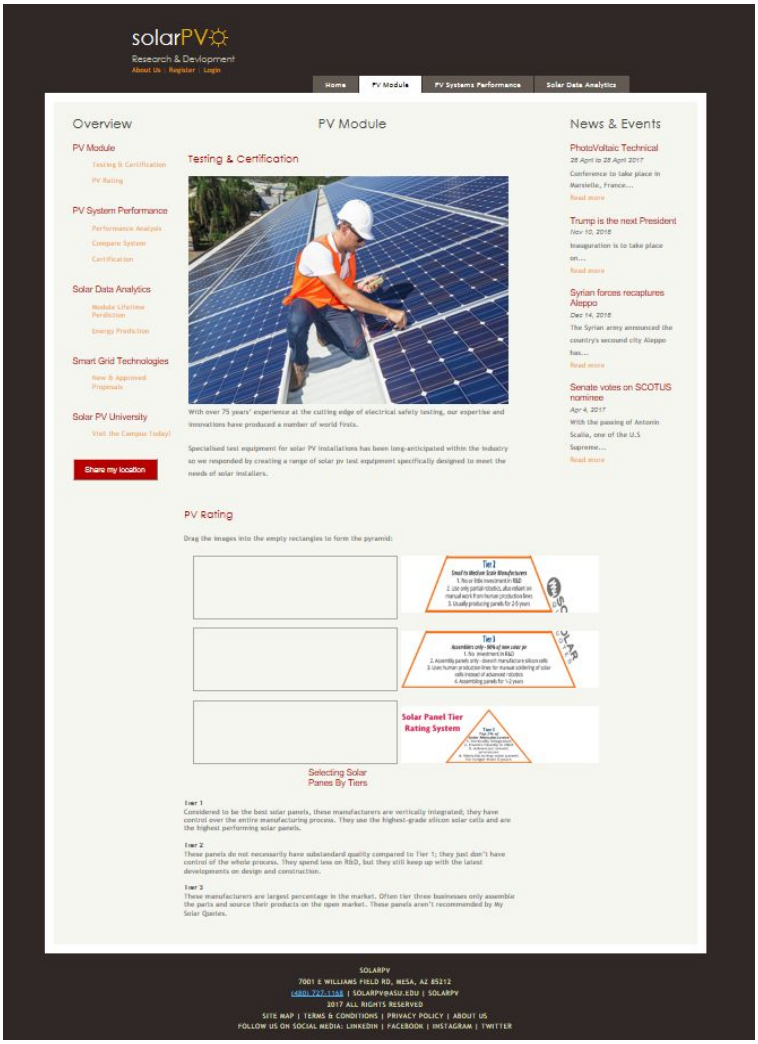


Figure 12 is a view of the finished PV Systems Performance page. This page contains filler-text and stock-images to support the theme of the page.

Figure 12.

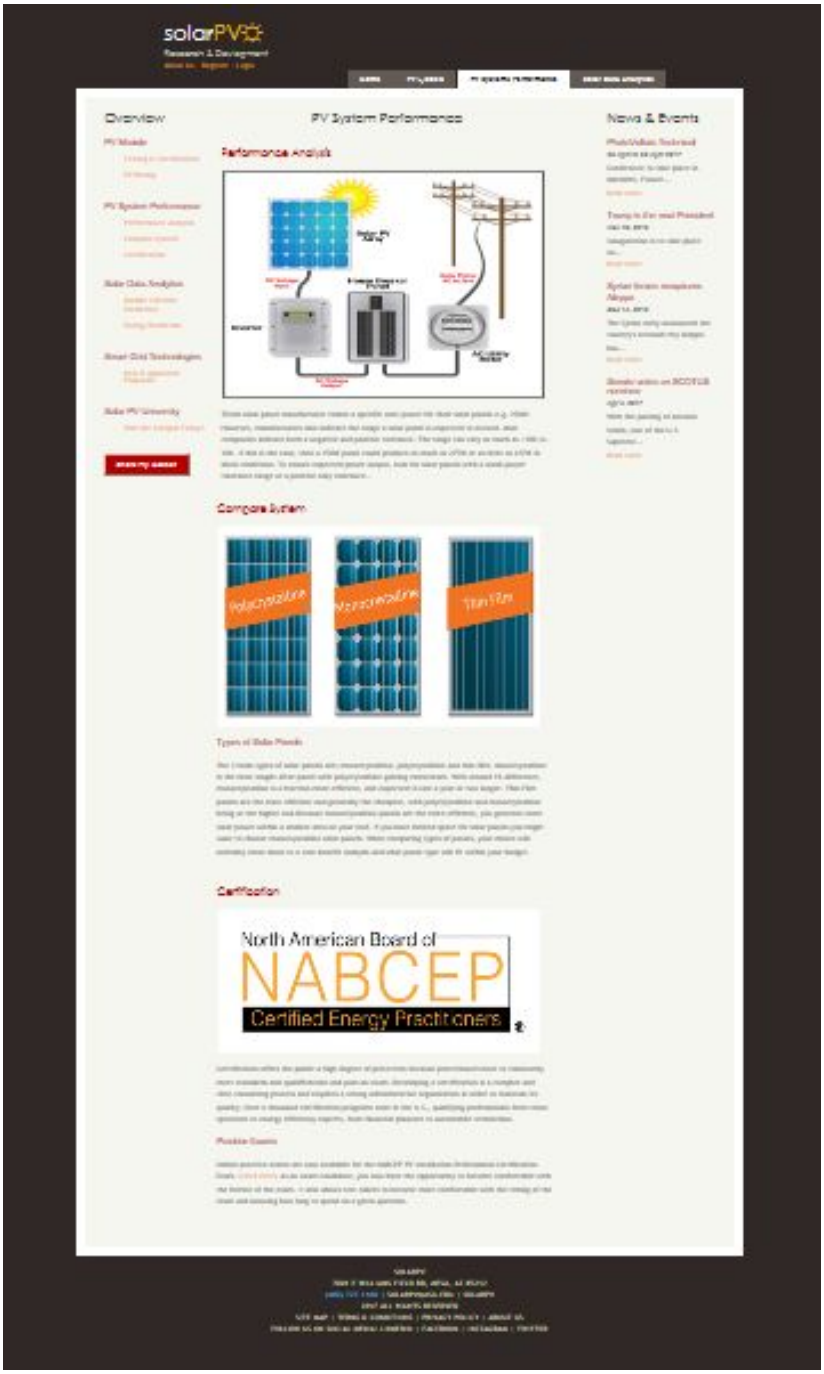


Figure 13 demonstrates the finished Solar Data Analysis page. This page contains filler-text, a filler-image, and a filler-video with audio to support the theme of the page. Note: the video is silent for the first 20 seconds, audio begins when the speaker begins explaining the

importance of solar energy. This is the nature of the video downloaded from youtube for homework purposes.

Figure 13

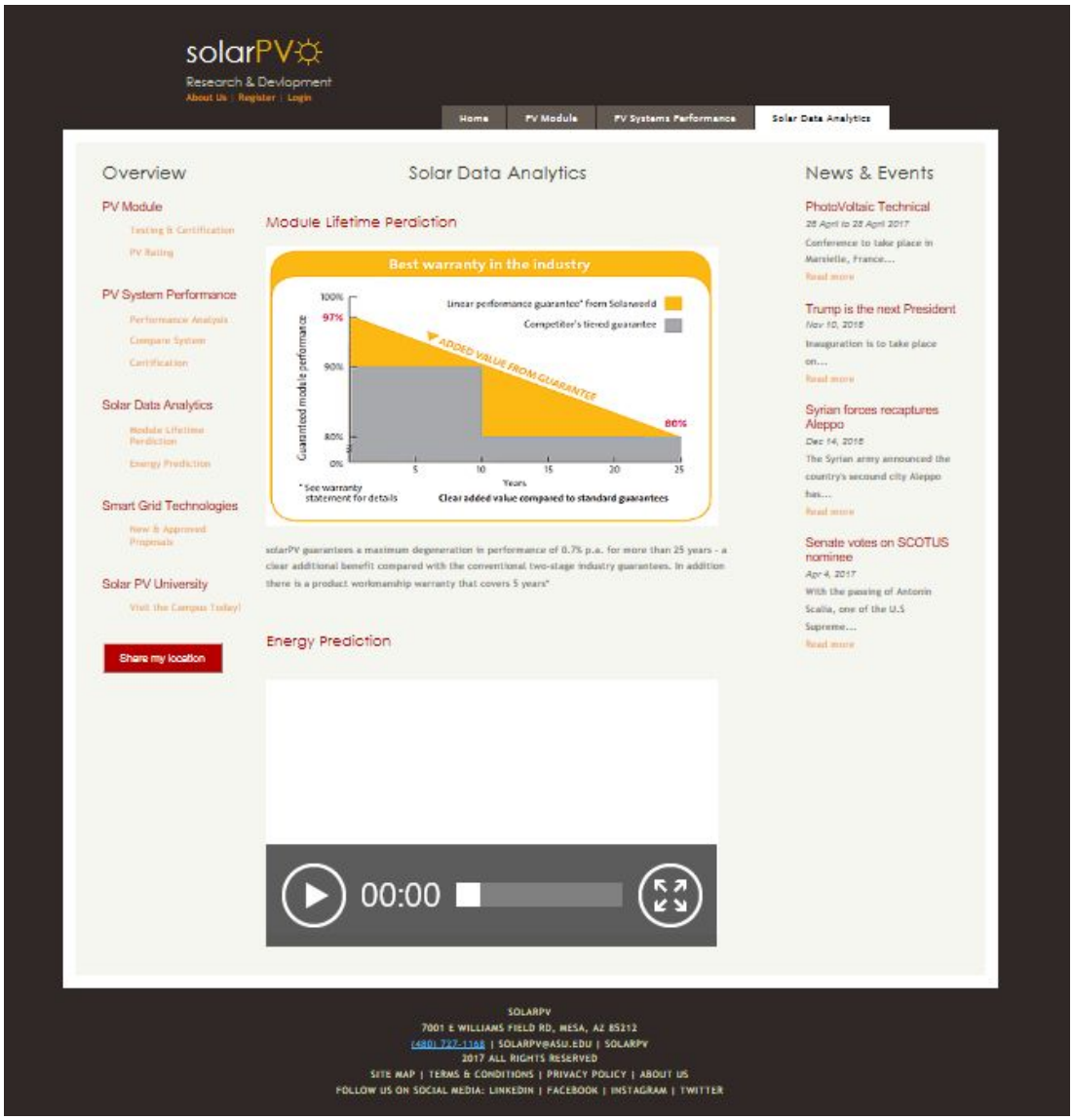


Figure 14 shows the finished About Us page. The first half of the page contains filler-text and a filler-image to support the theme of the page. The second half of the page contains the Contact Us form (Figure 15) that allows the user to contact the company. It has

input validation using HTML attributes. All Fields are required and the html attribute type email ensures a valid email. There is an autocomplete and tabindex attribute set to help fill forms faster. There is an option to reset or submit form, these features are enabled with the type attribute.

Figure 14.

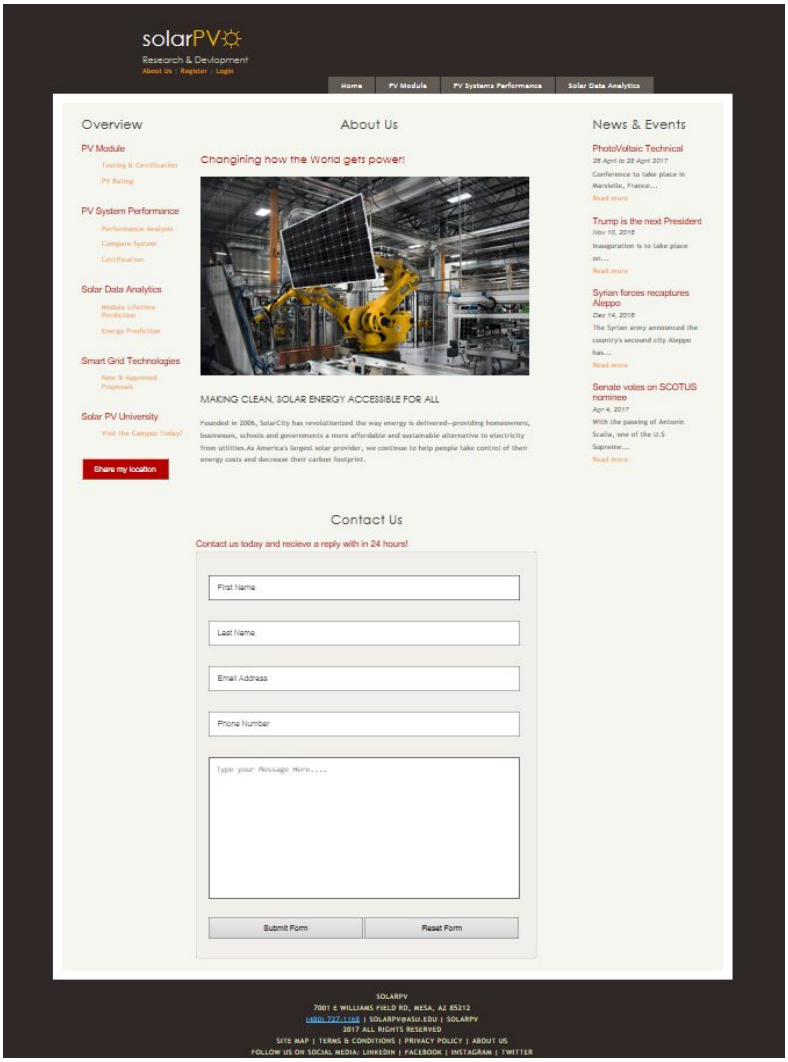


Figure 15.

```
<div id="content">
  <div class="container">
  <h1>About Us</h1>
  <h2>Changining how the World gets power!</h2>
      <img src="images/AboutUs.jpg" alt="AboutUs" width="565px" height="350px"><br /><br />
      <h3>MAKING CLEAN, SOLAR ENERGY ACCESSIBLE FOR ALL</h3>
      <p>Founded in 2006, SolarCity has revolutionized the way energy is delivered--providing homeowners, businesses,
          schools and governments a more affordable and sustainable alternative to electricity from utilities.As America's
          largest solar provider, we continue to help people take control of their energy costs and decrease their carbon footprint.</p><br />

      <br /><br />
      <div class="pad_content">

      <form id="contact-form" action="pageSubmit.html" autocomplete="on">
          <h1>Contact Us</h1>
          <h4>Contact us today and recieve a reply with in 24 hours!</h4>
          <fieldset><br />
              <input placeholder="First Name" name="fname" id="fname" type="text" tabindex="1" autofocus required><br /> <br />
              <input placeholder="Last Name" name="lname" id="lname" type="text" tabindex="2" required><br /><br />
              <input placeholder="Email Address" name="email" id="email" type="email" tabindex="3" required><br /><br />
              <textarea placeholder="Type your Message Here...." name="message" id="message" type="text" tabindex="5" required></textarea><br /><br />
              <button name="submit" type="submit" class="button">Submit Form</button>
              <button name="reset" type="reset" class="button">Reset Form</button><br /><br />
          </fieldset>
      </form>

          <div id="out"></div>
      </div>
  </div>
</div>
```

When the Contact Us form is successfully submitted, it will go to the pageSubmit.html form which thanks the user for their input shown in Figure 16. It contains filler-text and a filler-image to support the theme of the page.

Figure 16.

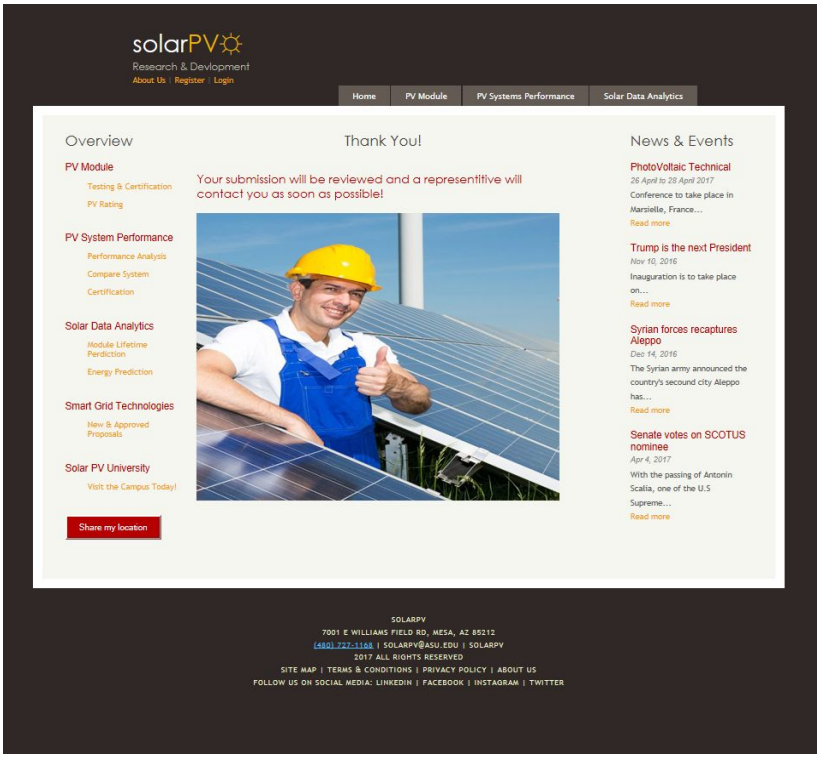


Figure 17 shows the finished Register page. This form uses JS and HTML attributes to validate the user input. We attempted to add jQuery to this page as well, however, it was getting overwritten by the already added JS. The current JS is shown in Figure 18 and the current HTML (options minimized to reduce screenshots) is shown in Figure 19-21. Note that there are various Drop Down options to regulate user input, these have input validated by ensuring the value is not left at default. Regular expressions were used in combination with JS in order to program the requirements to validate the following fields: username, email, and password, city, zip, and phone number.

Figure 17.

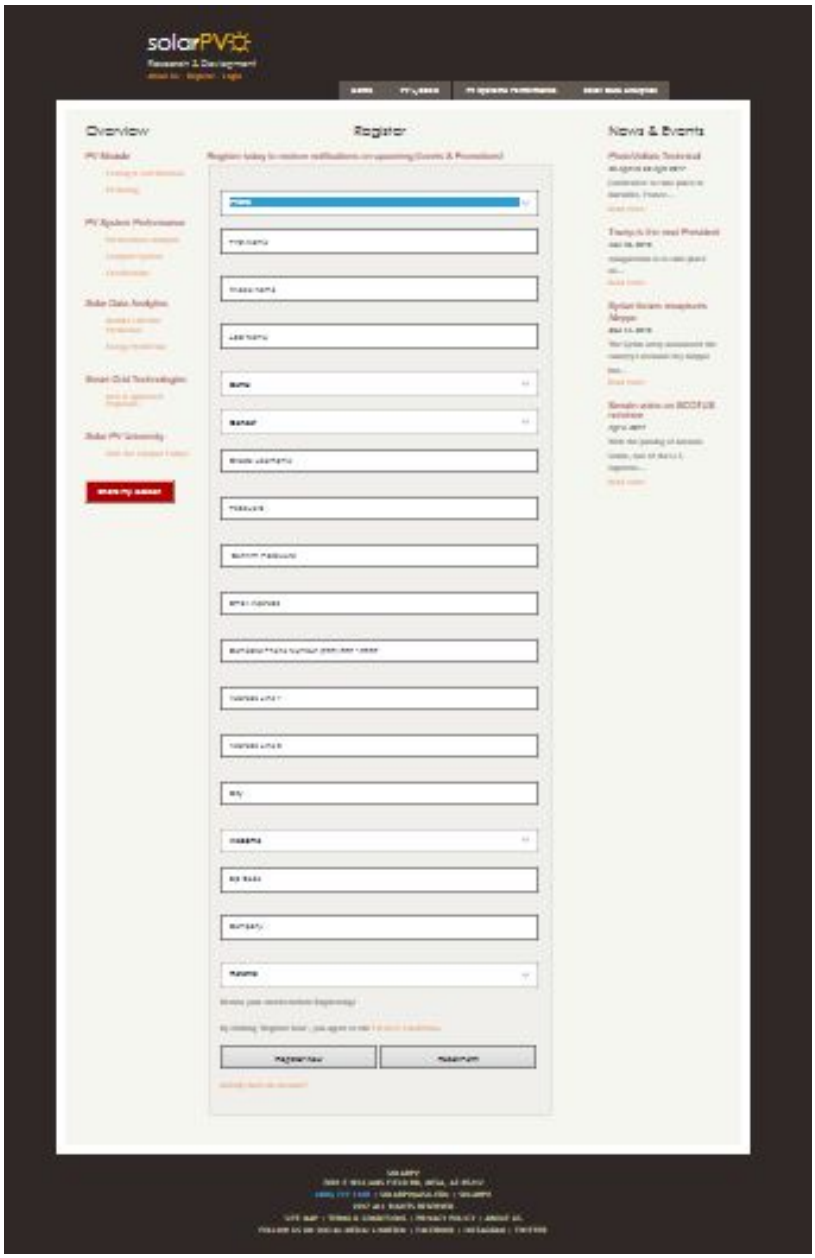
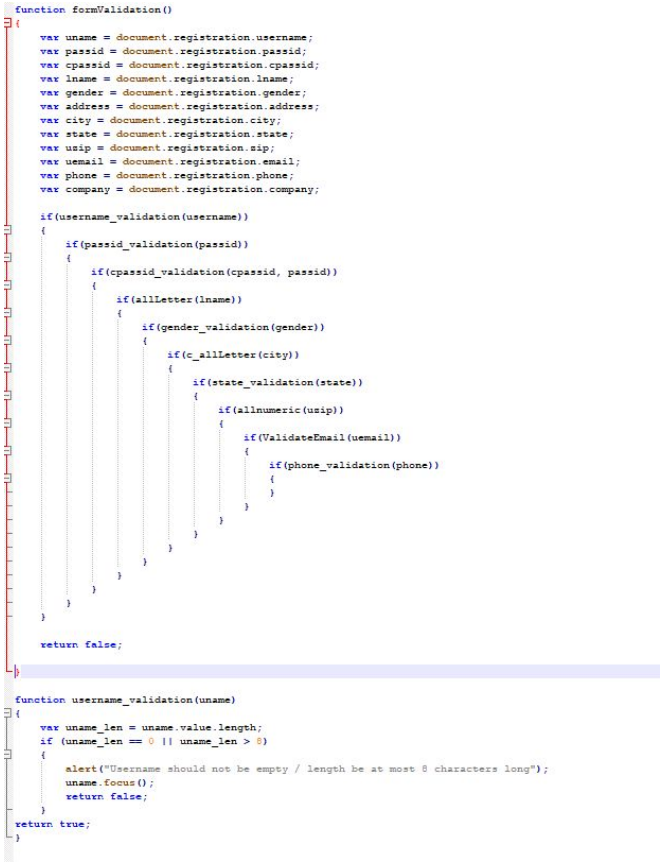


Figure 18

```
<div id="content">
  <div class="container">
    <form name='Register-Form' id="Register-Form" onsubmit="return formValid();" autocomplete="on">
        <h1>Register</h1>
        <h4>Register today to recieve notifications on upcoming Events & Promotions!</h4>
        <fieldset><br />
            <select name="Prefix" id="Prefix" tabindex="1" required autofocus>
            <input placeholder="First Name" id="Fname" name="Fname" type="text" tabindex="2" autofocus ><br /> <br />
            <input placeholder="Middle Name" id="Mname" name="Mname" type="text" tabindex="3" ><br /> <br />
            <input placeholder="Last Name" id="Lname" name="Lname" type="text" tabindex="4" required ><br /><br />
            <select name="suffix" id="suffix" tabindex="5">
            <select name="Gender" id="Gender" tabindex="6" required >

            <input placeholder="Create Username" name="Uname" id="Uname" type="text" tabindex="10" required><br /><br />
            <input placeholder="Password" name="Password" id="Password" type="password" tabindex="11" required><br /><br />
            <input placeholder=" Confirm Password" name="Cpassword" id="Cpassword" type="password" tabindex="12" required><br /><br />
            <input placeholder="Email Address" name="Email" id="Email" type="email" tabindex="13" required><br /><br />
            <input placeholder="Domestic Phone Number ### - ### - ####" name="Phone" id="Phone" type="text" tabindex="14" required><br /><br />
            <input placeholder="Address Line 1" name="Add1" id="Add1" type="text" tabindex="15" required><br /><br />
            <input placeholder="Address Line 2" name="Add2" id="Add2" type="text" tabindex="16"><br /><br />
            <input placeholder="City" name="City" id="City" type="text" tabindex="17" required ><br /><br />
            <select name="State" id="State" tabindex="18" required>
            <input placeholder="Zip Code" name="Zip" id="Zip" type="text" tabindex="19" required autofocus><br /><br />
            <input placeholder="Company" name="Company" id="Company" type="text" tabindex="20" required autofocus><br /><br />
            <select name="Referral" id="Referral" tabindex="22">
            <p>Review your entries before Registering!</p>
            <p>By clicking "Register Now", you agree to the <a href="#">Terms & Conditions</a>.</p>
            <input name="submit" class="button" value="Register Now" type="submit"></input>
            <button name="reset" id="reset" type="reset" class="button">Reset Form</button><br /><br />
            <p><a href="solarPV_Login.html">Already have an Account?</a></p>
        </fieldset>
    </form>
```

Figure 19



```
function formValidation()
{
    var uname = document.registration.username;
    var passid = document.registration.passid;
    var cpassid = document.registration.cpassid;
    var lname = document.registration.lname;
    var gender = document.registration.gender;
    var address = document.registration.address;
    var city = document.registration.city;
    var state = document.registration.state;
    var usip = document.registration.zip;
    var uemail = document.registration.email;
    var phone = document.registration.phone;
    var company = document.registration.company;

    if(username_validation(username))
    {
        if(passid_validation(passid))
        {
            if(cpassid_validation(cpassid, passid))
            {
                if(allLetter(lname))
                {
                    if(gender_validation(gender))
                    {
                        if(c_allLetter(city))
                        {
                            if(state_validation(state))
                            {
                                if(allnumeric(usip))
                                {
                                    if(ValidateEmail(uemail))
                                    {
                                        if(phone_validation(phone))
                                        {
                                        }
                                    }
                                }
                            }
                        }
                    }
                }
            }
        }
    }

    return false;
}

function username_validation(uname)
{
    var uname_len = uname.value.length;
    if (uname_len == 0 || uname_len > 8)
    {
        alert("Username should not be empty / length be at most 8 characters long");
        uname.focus();
        return false;
    }
return true;
}
```

Figure 20

```
function passid_validation(passid)
{
    var passid_len = passid.value.length;
    var requirement = /((?=.*[a-z])(?=.*[A-Z]).{1,})/gm;
    if (passid_len == 0 || passid_len > 8 || pw.value.match(requirement) == false)
    {
        alert("Password should not be empty / length be at most 8 characters long & contain 1 upper, 1 lower, and 1 digit.");
        passid.focus();
        return false;
    }
return true;
}

function cpassid_validation(cpassid, passid)
{
    if (cpassid.value.match(passid) == false))
    {
        alert("Passwords must match.");
        cpassid.focus();
        return false;
    }
}

function allLetter(lname)
{
    var letters = /^[A-Za-z]+$/;
    if(lname.value.length > 0 || lname.value.match(letters))
    {
        return true;
    }
    else
    {
        alert('Last name should not be empty and have alphabet characters only');
        lname.focus();
        return false;
    }
}

function gender_validation(gender)
{
    if(gender.value == "Default")
    {
        alert('Select your Gender from the list');
        gender.focus();
        return false;
    }
    else
    {
        return true;
    }
}

function c_allLetter(city)
{
    var letters = /^[A-Za-z]+$/;
    if(city.value.length > 0 || city.value.match(letters))
    {
        return true;
    }
    else
    {
        alert('Cityshould not be empty and have alphabet characters only');
        city.focus();
        return false;
    }
}
```

Figure 21

```
}
function state_validation(state)
{
    if(state.value == "Default")
    {
        alert('Select your State from the list');
        state.focus();
        return false;
    }
    else
    {
        return true;
    }
}

function allnumeric(usip)
{
    var numbers = /^[0-9]+$/;
    if(usip.value.match(numbers) || usip.value.length == 5)
    {
        return true;
    }
    else
    {
        alert('ZIP code must have 5 numeric characters only');
        usip.focus();
        return false;
    }
}

function ValidateEmail(uemail)
{
    var mailformat = /^\w+([\.-]?\w+)*@\w+([\.-]?\w+)*(\.\w{2,3})+$/;
    if(uemail.value.match(mailformat))
    {
        return true;
    }
    else
    {
        alert("You have entered an invalid email address!");
        uemail.focus();
        return false;
    }
}

function phone_validation(phone)
{
    var numbers = /^[0-9]+$/;
    if(phone.value.match(numbers) == false || phone.value.length != 10)
    {
        alert('Phone Number must have 10 numeric characters only');
        phone.focus();
        return false;
    }

    else
    {
        alert('Form Succesfully Submitted');
        window.location.reload()
        return true;
    }
}
```

Figure 22 shows the code implemented on the Registration form, in order to handle the submit event once all fields are vald. The jQuery here, is simply preventing the default to occur.

Figure 22

```
$(document).ready(
    function(){
        $("#registration-form").submit(
            function(event){
                //handler -- default action is to submit to the new page
            event.preventDefault();
            }
        );
    }
);
```

Figure 23 is a visual of the finished Login page. This page uses the html attributes maxlength in order to regulate the user input. In the future this will be used with php to validate user authenticity, shown in Figure 24. This form also gives the user access to the registering page if they are a new User. In the future we would like to use php or sql to do username or password recovery for the user.

Figure 23

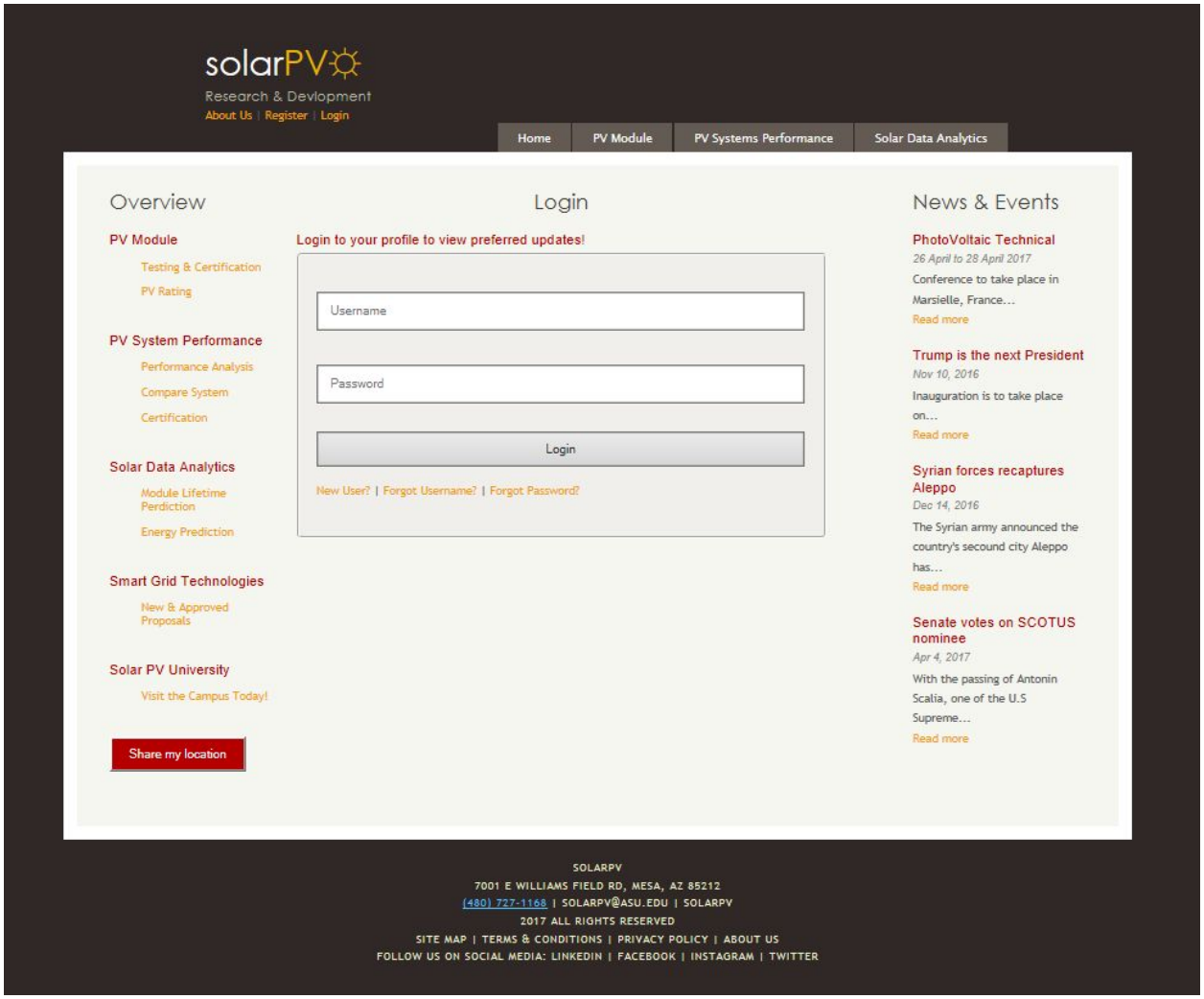


Figure 24

```
    <div id="content">
      <div class="container">
          <form id="Login" action="" method="post" autocomplete="on">
              <h1>Login</h1>
              <h4>Login to your profile to view preferred updates!</h4>
              <fieldset><br />
                  <input placeholder="Username" name="uname" type="text" tabindex="1" required maxlength="8"><br /><br />
                  <input placeholder="Password" name="pwd" id="userPassword" type="password" tabindex="2" required maxlength="8"><br /><br />
                  <button name="submit" type="submit" id="login_button">Login</button><br /><br />
                  <p><a href="solarPV_Register.html">New User?</a> | <a href="#">Forgot Username?</a> | <a href="#">Forgot Password?</a></p>
              </fieldset>
          </form>
          <br /><br />
          <div class="pad_content">
              <div id="out"></div>
          </div>
      </div>
    </div>
```

User Manual

First, download the zip file provided, save in to desktop path directory for ease of access. For local use, no additional steps are necessary. Simply right click on solarPV_Home.html and open in preferred browser. To view source files (.html, .css, .js), open file in a text-editor (notepad++, notepad, etc.) To publish this site, a domain is required. Upload the contents of the .zip file onto the domain in the same manner that they are contained in the .zip file (images are in images file and videos are in videos file). Open source code and attach the domain name to the beginning of all the pathnames of the source files, images, and videos in each page.

Note: The Jquery library was referenced through a symbolic link to simplify the process for the new user. (The user will not have to download the JQuery library).

Conclusion

Completing this Project allowed us to review the concepts learned in IFT 301 and served mostly as a refresher. We did, however, learn how to prompt a user to share their geolocation, embed drag-and-drop capabilities, and the fundamentals of jQuery. The most challenging task We faced was embedding geolocation onto the web pages. At first, we tried doing it on window on-load, however, it made the pages lag. We overcame this hurdle by designing a button that allows the user to be prompted to share location when pressed. This design can be improved by

having the geo-location prompted on window on-load instead of on-click on the “Share my location” button.