Tools for an Online Presence in Science

Ethan Nelson
Jet Propulsion Laboratory,
California Institute of Technology

Jet Propulsion Laboratory
California Institute of Technology

Online branding

An online presence

- Science, like business, is an occupation that does have some dependence on networking, making yourself known, and being “findable”.
- Building an online presence is about building your personal brand.

Branding examples

- Think about a fast food restaurant.
- What companies comes to mind?

- These are large entities that likely elicit some specific image or thought in your mind.

Branding examples

- How did you choose your grad school advisor?
  - Was it word of mouth?
  - Their involvement in some activity?
  - How about their online website and portfolio of research?
- Even for individual people, branding is important.
- It communicates a clear message about who you are and what you are passionate about.
- Your online brand also establishes a reputation.

Branding strategies

- Branding is strengthened by consistency.
- Think back to the fast food restaurant. What were our thoughts? Were there similarities?
- If these businesses were different everywhere you went, it would be difficult to associate them together.

Consistency in branding

- Consistency on the web can stem from a few characteristics:
  - Consistent photos
  - Consistent themes
  - Consistent styles
  - Consistent namespaces
- These characteristics are carried across multiple platforms and spaces.
- Of course, each platform approach is dependent on that environment.

Platforms and their spaces

- Personal website
  - The root site, portfolios of everything
- GitHub
  - Portfolio of code
- LinkedIn
  - Professional network, online CV
- Research Gate/Google Scholar
  - Portfolio of research
- Twitter/Instagram
  - Public outreach, engagement, advertising

Questions to consider

1. Have you been to the personal website of someone that you have liked? If so, what were the aspects you liked?
2. Thinking about attributes like

   – Functional –Creative –Formal –Colorful –Muted –Templated –Unique –“Old school HTML” –Informative

What attributes do you want your website to have?

What is a website?

What is a website?

- Visiting a website is like accessing a server via ssh or scp and downloading files.
- It’s just a different protocol where you use an internet browser that renders the files instead of a terminal.
- Those files are web pages.

Website types

- Websites can simply be files *like* an scp or they can be stitched together at access time.
- Static
  - Only sending pregenerated files.
- Dynamic
  - Files are stitched together as someone requests them
  - Often backed by a database
  - Database administered by “content management system”

Static sites

- Static sites only need a server listening for requests.
  - You throw the files onto a server and let them sit.
  - Requires interaction via the command line or some other headless equivalent.
- There is minimal user input on what is returned, generally making them more secure. (Ask—receive).
- Some hosts offer static hosting where you can edit pages through the browser and they take care of the rest.

Dynamic sites

- Dynamic sites require at a minimum some program that compiles the pages when accessed and often a constantly running database too on the server.
  - This increases the resources required for hosting.
  - Usually allows for some graphical user interface to edit files directly in the browser.
- Since content depends on user input, they need to be maintained for security (Ask—build—receive).

Options for a website

Minimum resources needed

- Web hosting is like a residence: you need an address and a physical place to stay.
- For addresses, the internet uses a domain name service to associate IPs with domains:
  - 144.92.131.146 -> aos.wisc.edu
- For the physical place, you need a server to host your website—provided by someone or provisioned by you.

Domains

- Domain registrars sell domains if you want something unique (ethan-nelson.com, wisc.edu).
- Many websites also offer subdomains (ethan-nelson.github.io) or trailing paths (example.com/username).
- Pricing runs $10-30 a year depending on the top level domain (.com, .me, .science, etc.).
  - Note that domain contact information is public unless the registrar provides some private proxy.
- Websites also have student packs available with discounts and free options.

Domains

- The domain registrar you choose does not have to be your web host.
  - Most registrars allow you to point the domain "nameservers" to another service.
  - Alternatively, you can point the IP address to another IP address or domain, called a redirect (e.g. ethan-nelson.science -> lecuyer.aos.wisc.edu/profiles/ethan-nelson).
  - Some registrars sell a package deal with a domain and hosting, but be cautious of the domain transfer restrictions in case you want to move to another service later.

Hosting

- Commercial providers offer hosting space with a wide degree of customization.
  - Static site hosting: you get scp/ssh access to edit files on a server, they handle configuration and administration; or you get a GUI editor for a website builder.
  - Wordpress site hosting: you're given an install of a CMS and they handle configuration and administration
  - Shared web hosting: given space on a shared (but sandboxed server); up to you to configure hosting software, but they handle system administration
  - Virtual private server: given space on your own virtualized machine and you are responsible for configuration and administration

Hosting

- Pricing varies widely based on service level agreement, limits on bandwidth and space, throttling of resources, etc.
  - If you have a low traffic, low intensity site, most providers should work.
  - A “hug of death” or flood of traffic is where providers greatly vary in your options.
- I’d recommend starting simple with someone that manages most things and moving up when you get more comfortable and want to.

Do you need paid hosting?

- It depends on your current situation and what you want to get out of the website.
  - For professional information, your advisor or mentor may have a web server you can throw a site on.
  - The university has free static hosting for students (https://it.wisc.edu/services/google-apps/)
    - You can buy a custom domain and redirect to that page.
  - If a researcher, your employer may have space too.
  - If it's for hobby or personal stuff, or you're moving soon, you may want to go with your own.
  - Free options still exist—look for free static hosting.

Basic website structure

Web technology

- Your browser serves HTML or hyper text markup language.
  - This can come directly from the server as a direct file.
  - It can be assembled by a scripting language, then served or streamed to you.
- Cascading style sheets or CSS controls the layout of the page.
  - CSS styles fonts, images, etc (centered, fontsize, fontcolor, flashing, rounded edges).
  - CSS styles layout/content (grids, text-wrap, etc).
  - CSS renders everything on the client side in the browser.

Primer on web technology

- Javascript or ECMAscript is a scripting language that can do a lot in the browser.
- Javascript executes code client-side in the browser.
- Javascript can manipulate anything on the site.
  - Add/change/remove text,
  - Add/change/remove css,
  - Add/change/remove features.
  - It’s powerful but relies/depends on the user’s browser.

Basics of HTML

- HTML is a node tree structure like an XML file:

```
<body>
Welcome!
</body>
```

- The basic components of an HTML file are:

```
<!DOCTYPE html>      (document type declaration)
<html>
<head>…</head>       (header information)
<body>…</body>       (page body–what's rendered)
</html>
```

Basics of HTML elements

- There are a variety of attributes or tags you can use as a node—all with different features:
  - <h#></h#> (e.g. <h1>): header
  - <img >: image
  - : embolden text
  - : paragraph
  - <script></script>: add Javascript
  - <style></style>: add CSS
- Way too many to go through here (but we will go through some later). Plenty of lists exist online that outline the features.

What does a webpage look like?

- In your browser: view-source:https://aos.wisc.edu

Website building strategies

- Roll your own or use a WaaS (website-as-a-service).
- To roll your own, you can start from scratch or look for a template online.
  - These exist for static websites, CMSs like Wordpress, or other website types.
  - Download and customize the template as you wish.
  - In any case, try to retain consistent layout or styling across pages.
- For a WaaS, you will probably have a library of themes and layouts to choose from with some degree of customization.

Website structure

- “index” or home page is the main landing page:
  - https://www.ethan-nelson.com/
- Additional pages will have a subpath:
  - https://www.ethan-nelson.com/research/
- The subpath naming will depend on your tech:
  - Wordpress by default follows example.com/?q=25
  - Drupal by default follows example.com/node/25
  - Please customize them so they are human-readable!
  - If you roll your own website, subpaths are named by the subdirectories (/home/website/index.html, /home/website/research/index.html).

Webpage design considerations

- Unless you are aiming for something super creative, aim to have a functional website.
  - Design for human intuition and what people are used to.
  - Example: hyperlinks underlined or bolded.
- With modern CSS, webpages can look very pleasing on mobile just as they do on a computer.
  - These are called “responsive” pages.

CSS styling

- CSS, or cascading style sheets, define how a webpage is rendered in an internet browser.
- Styles can be assigned to all instances of a given element or only specific ones identified.
- While style here sounds like it applies only to attributes like text color or font, it actually applies to how content is set on the page.

SSL certificates

- SSL certificates are used to access a website through https:// instead of http://
- Some hosts offer them for a price, others provide them for free.
- Browsers have oscillated back and forth on how prominently to show whether a site is available using HTTPS or not.
- HTTPS encrypts the page contents in transfer to prevent tampering by people in the middle.

Testing out a webpage locally

- Create a new file named index.html
- In a text editor, add:

```
<!DOCTYPE html>
<html>
<head><title>My test site</title></head>
<body>
<center><p>This is my test website.</p></center>
</body>
</html>
```

- Save the file and open it up using a web browser.

Testing out a webpage locally

- Let's play around with some CSS now.
- In the head element, we will style the paragraph:

```
<style>
p {
font-size: 24px;
color: #050505;
}
</style>
```

Testing out a webpage locally

- And how about some Javascript too? Add this to the body (either before or after the paragraph):

```
<script>
par = document.getElementsByTagName(‘p’);
par[0].innerHTML += ‘ Have a good day!’;
console.log(“You found a secret; I’m hiring!”);
</script>
```

Online portfolios

Online portfolio

- A portfolio advertises what you have done that may be separate from your personal website.
- The platform you choose depends on the content:
  - Code?
  - Research papers?
  - Essays?
  - Art?
- A portfolio can be embedded in a page on your website or you can externally link to it.
- This is going to be a personal choice and will depend on maintenance, interest, update cycle.

Testing out a webpage on the web

- On GitHub, create a repository named yourusername.github.io
- Upload the index.html file.
- In the settings, enable GitHub Pages.
- Go to yourusername.github.io

Testing out GSuite

- Log in with your Wisc account information.
- Create a new site.
- Add some content on the homepage.
- Click publish in the top right.
  - Here you will choose your custom subpath.
  - You can also restrict visibility to only campus.
- Depending on your affiliation, you can create multiple site trees.

Closing

- Your online presence should be reflective of who you are and what you care about
- Use it as an opportunity to experiment, too (think of it as a fan site for you)!