Summer Internship: ShellCast Web Application Student Developer

Position Title: Student Web Application Developer (Remote Work Friendly)

Position Description:
The Biosystems Analytics Laboratory (BAL; http://nelson.rbind.io/) in the Department of Biological and Agricultural Engineering at North Carolina State University is looking to hire a student developer to join their research team. The student developer will work together with members of the BAL to create the ShellCast web application. ShellCast is funded by North Carolina Sea Grant and is being created to support North Carolina's growing shellfish industry. Two times a day, ShellCast will (1) pull gridded rainfall forecasts from the National Weather Service's National Digital Forecast Database (NDFD), (2) perform a set of calculations to determine the probability of rainfall for several areas along the coast of North Carolina (the equations for these calculations will be provided to the student developer; the student developer will not have to create any models), (3) update the web application front-end (coastal map image) and back-end (databases), and (4) send text messages and/or emails to users who subscribe to the application with notifications regarding the forecasts. Wireframes for the proposed ShellCast web application are available upon request. This position is open to remote workers. We welcome applications from all students who have the requisite skills to complete the work, and particularly encourage students from historically underrepresented groups in STEM to apply.

Required Skills and Experience:
- Experience developing front-end web applications using PHP, MySQL, CSS, and HTML or an equivalent open-source platform
- Experience versioning code with Git
- Independent worker/self-starter
- Creative thinker
- Effective at maintaining open and clear written and verbal communications
- Willingness to seek out resources to solve technical problems

Desired Skills and Experience:
- Experience building web applications on the Google Cloud Platform
- Experience collaborating and sharing code on GitHub
- Experience integrating email and texting services (i.e., Mail Chimp) into web applications
- Experience coding in or working on website development in Python
- Experience with interactive image maps
- Experience with reactive programming
- Enthusiasm in developing environmental decision-support tools

Minimum Education Requirements:
Graduate or upperclass (junior and senior) majors in computer science, computer engineering, or related field. Underclass (first-year and sophomore) in the same fields are welcome to apply, but must demonstrate commensurate experience.

Location: Raleigh, NC or remote workplace

Start Date: Expected in early summer 2020

Wages: $20/hour depending on experience

Hours: 30-40 hours/week

To Apply: Please submit an application including a resume, unofficial transcripts, link to a GitHub project and/or example web application, and contact information for one professional reference via this Google Form: https://forms.gle/jriZSPWBvUT9tPvb9. Any questions regarding the position can be addressed to Natalie Nelson (nnelson4@ncsu.edu).

Additional Background on ShellCast:
One of the greatest operational and financial barriers to further expansion of the North Carolina shellfish industry is temporary harvest closures due to water quality concerns following storm events. Due to the risk of bacterial contamination of shellfish resulting from stormwater runoff, the North Carolina Division of Marine Fisheries temporarily closes certain shellfish harvest areas after rainfall events of specified intensity and duration (e.g., 3" of rainfall in 24-hours). Temporarily closed harvest areas will only re-open after water quality samples confirm the absence of threatening bacteria levels. During periods of extended rainfall, closures can arrest shellfish harvest operations for weeks and cause significant economic harm. Though closures ensure that only the highest quality product reaches the market, they also impede sales opportunities and cash flow to growers, and limit the supply of shellfish available to seafood markets, restaurants, and consumers – all of which harm coastal NC economies.

Although shellfish growers are currently notified by the Division of Marine Fisheries of harvest area closures, they receive no prior warning. As a result, to predict whether their sites are at-risk of near-term closure, growers must rely on their intuition and interpretation of weather forecasts. Given reliable and advance notice, growers could decide whether to harvest early and cold store sufficient quantities to supply buyers during a closure event, relocate their product to another growing area, or assume the risk of closure. Thus, ShellCast will provide a decision-support tool to help shellfish growers efficiently manage their operations.