IT Specialist III

Job Summary

The Department of Entomology and Plant Pathology, University of Tennessee Institute of Agriculture is seeking a database and web developer. The applicant will participate in a research project to expand a database and website for genetic and genomic data.

The position includes participating in the specification, analysis, design, development, maintenance, and documentation of the Tripal software system, a Drupal-based content management system for genetic and genomic scientific data (http://tripal.info/). The i5k workspace will be the primary use case. The i5K is an initiative to sequence the genomes of 5,000 arthropod species, and the workspace is the online presence for scientists to access, curate, visualize and share the data from the i5k project (https://i5k.nal.usda.gov/).

The project requires mapping of biological data to the community standard Chado database schema and developing Tripal-based interfaces to automatically ingest genomic data from public databases and guide users through data submission. The project will also include improvements to the organization and display of genomic data on the site. All development will be in the Drupal content management system, including writing PHP and javascript code and developing HTML and CSS templates. The job will require teamwork with biologists and computer scientists as well as the ability to work independently. The successful applicant will be exposed to interdisciplinary research in the field of biological database development and will have the opportunity to expand their skill set in this exciting field of science.

Depending on previous experience with relevant technologies, working remotely may be an option.

Job Functions

- **Web application design and web programming.** Tripal is written as a set of PHP-based Drupal modules and is the basis of the i5k workspace. In this position, the programmer will maintain and support the existing Drupal/Tripal site as well as develop new modules.
- **Plans and coordinates projects as assigned.** (see examples below).
- **Works with scientists to understand and solve the information technology needs of users.** The needs of the i5k workspace and the Tripal software itself evolve as biological and genomic science advances, and the specific project will need to be tailored and updated by the developer to reflect this.
- **Follow programming best practices.** The developer will be expected to write code meeting the community standard. This includes using version control and sufficiently documenting, commenting, and testing code. Code will be made available on GitHub.
- **Researches and trains on new technologies as appropriate.** Tripal utilizes many biology-specific concepts and relies on various existing technologies that will require independent study. For example, Chado (the standard molecular biology relational database schema), BLAST (the DNA sequence similarity search engine) and Jbrowse (the javascript-based genome browser). Tripal is also built with extensive use of scientific controlled vocabularies, which the developer will need to become familiar with. Further, new web technologies will need to be integrated into Tripal as they become available.
• **Engagement with the Tripal community.** The Tripal software is used and developed by many independent plant genome databases and includes a large community of Tripal software developers and users. The developer will need to engage with the community by attending monthly calls, helping in responding to bugs/issues, and coordinating their own development activities with the larger Tripal community.

• **Performs other related duties as required.** For example, travel to meet the i5k science team and to scientific conferences, presenting information on Tripal and i5k including both demonstrations and oral presentations.

**Project Examples**

• Improve on the Tripal eutils module ([https://github.com/NAL-i5K/tripal_eutils](https://github.com/NAL-i5K/tripal_eutils)). Tasks include full implementation of metadata storage, mapping NCBI’s metadata to existing controlled vocabularies, expanding the scope from genome assemblies to other data types such as gene predictions and RNASEq data.

• Improve metadata ingest to guide public site users in submitting their own datasets. Continuing improvement of a Tripal module for this task.

• Develop site templates and navigation to enable users to retrieve data and metadata in a more genome-centric way.

• Improve organization and display of gene families or related genes, particularly through use of controlled vocabularies. Development of a gene family module for Tripal.

**Minimum Qualifications**

• Master’s degree or a Bachelor’s degree with 2-3 years of experience.

• Proficient in a Linux operating system environment with minimal systems support.

• Experience in relational database development (SQL).

• Experience writing code in a modern programming language (php, python, java, or perl)

• Excellent communication and problem-solving skills.

• Ability to interact with scientists from diverse disciplines and backgrounds.

• Ability to work independently and to prioritize and manage a variety of tasks.

**Preferred Skills**

• Experience in web development, particularly javascript and/or PHP.

• Familiarity with web programming within content management systems, particularly development of modular code such as Drupal modules.

• Familiarity with biological concepts, especially genomics and genetics,

Regular full time position with benefits

Pay Range: $50k-$66k based on qualifications and experience

Location: The University of Tennessee, Knoxville Institute of Agriculture, AgResearch

Required documents to apply: CV, transcripts, 2 professional references (upload as one PDF or DOC file).

EEO/AA Statement /Non-Discrimination Statement
All qualified applicants will receive equal consideration for employment and admissions without regard to race, color, national origin, religion, sex, pregnancy, marital status, sexual orientation, gender identity, age, physical or mental disability, or covered veteran status.

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