

Postdoctoral Research Associate

The Tulane University Biodiversity Research Institute (TUBRI) is a research center of Tulane's School of Science and Engineering, located on the grounds of the F. Edward Hebert Research Center in Belle Chasse, Louisiana, a suburb of New Orleans. TUBRI houses the Royal D. Suttkus Fish Collection and specializes in biodiversity discovery (primarily fishes) and biodiversity informatics research. Henry L. Bart, Jr., Professor of Ecology and Evolutionary Biology serves as TUBRI Director and Yasin Bakış is Senior Manager of Biodiversity Informatics and Data Engineering for the center.

A postdoctoral research associate is sought to provide biological expertise and insight to the newly funded, NSF Harnessing the Data Revolution Institute project entitled, *Imageomics: A New Frontier of Biological Information Powered by Knowledge-Guided Machine Learning*. The project involves using Machine-Learning methods to train neural networks to extract phenotypic trait data from images of fish specimens, aided by a fish anatomy ontology and trees depicting phylogenetic relationships among tested fish species.

The successful candidate will actively participate in the research of the project under the mentorship of Bart and Bakış.

1. Analyzing images of fish specimens and corresponding metadata and creating reports based on the statistics about the data
2. Extracting morphological traits from fish specimen images to verify species identity
3. Designing and following workflows and pipelines for processing images and using extracted morphological traits data in "morphological barcoding" experiments for diagnosing the various taxonomic groups.
4. Verifying project outputs for scientific accuracy
5. Support the coding team by
 - a. assisting in software design where biological expertise is needed
 - b. making sure the software is properly documented and openly accessible
 - c. providing scientific input during the coding process so that outputs are scientifically sound and publishable
6. Attending related workshops, training programs, and meetings
7. Keeping abreast of the latest literature and openly sharing finding with project collaborators,
8. Work collaboratively with Imageomics ML experts to explore deep-learning methods,
9. Perform scientific analyses based on outputs of the project
10. Present analysis results at conferences and publish findings at scientific journals.

Required Knowledge, Skills, and Abilities

- Prior (proven) experience in at least one of the following fields:
 - Image Processing, Artificial Intelligence, Genetic Algorithms, Biodiversity Informatics, Computational Biology, Bioinformatics, Biomedical Informatics, Ecoinformatics or a related field (*scientific publications*)
- Working knowledge of at least three of the following languages (*one from each group*)

- {Java, C, C++, C#}, {Python, PHP, Perl}, {R, Bash, JavaScript}, {ORACLE SQL, MSSQL, PostgreSQL, MySQL}
- Working knowledge of Unix based operating systems
- Experience in writing grant proposals and scientific publications
- Strong problem-solving skills

Required Education and/or Experience

- PhD in Biological Sciences, Biodiversity Informatics, Computer Science, Information Sciences, Computational Biology/Bioinformatics, or a related field

Preferred Qualifications

- Experience with:
 - Image Processing, Artificial Intelligence/Neural Networks, Genetic Algorithms and Web-database applications
- Experience in parallel computing (GPU)
- Working knowledge of version control system (GIT)

Other

- Position is open to international candidates
- Should be able to travel internationally
- Strong communication and interpersonal skills

Start date: 1 February 2022

For additional information about the position, please contact Henry Bart (hbartjr@tulane.edu) or Yasin Bakış (ybakis@tulane.edu)

Apply here: <https://apply.interfolio.com/99039>