

POSITION DESCRIPTION
Lab of Ornithology
College of Agriculture and Life Sciences
Cornell University
Ithaca, NY

POSITION: Postdoctoral Associate (BRP)

START DATE: Upon Completion of Search

LOCATION: Cornell Laboratory of Ornithology
159 Sapsucker Woods Road
Ithaca, NY 14850

APPLICATION PROCEDURE: Please send a single pdf file containing a letter of application outlining qualifications and experience for the position, curriculum vitae, and the names and contact details for three references. Email to set2@cornell.edu or in hard copy to Susan Taggart, Cornell Lab of Ornithology, 159 Sapsucker Woods Road, 291A Johnson Center for Birds & Biodiversity, Ithaca, NY 14850. Inquiries about position specifics can be directed to Holger Klinck Holger.Klinck@cornell.edu

Review of applicants will continue until the position is filled.

POSITION SUMMARY

The Bioacoustics Research Program (BRP), one of 12 programmatic units within the Cornell Lab of Ornithology (Lab), collects and interprets sounds in nature by developing and applying innovative technologies across multiple ecological scales to inspire and inform conservation of wildlife and habitats. In addition to conducting basic and applied research and technology development, BRP provides bioacoustics monitoring tools, services, and expertise to partners and customers in academia, government, and industry.

This Postdoctoral Associate will join the BRP team and work collaboratively with the Lab's Information Science (IS) team on the research and development of methods and algorithms to extract and classify bird vocalizations in long-term acoustic data sets recorded globally.

These research and development activities form part of an interdisciplinary initiative that aims to: (a) design and deploy landscape-scale remote acoustic sensing networks that capture abundance and distribution of birds; (b) design systems for automatic bird sound identification; (c) develop tools for both mining existing databases of recordings containing these and other vocalizations of birds; and (d) provide an online exploration/research hub for spatio-acoustic "big data" access, navigation, and visualization. Research results will enable deeper understanding of spatiotemporal patterns of avian biodiversity that are necessary for biological and conservation applications.

DUTIES AND RESPONSIBILITIES

Research novel machine learning algorithms (focus on deep learning) that can be applied to the detection and classification of bird vocalizations. Work collaboratively with scientists and software developers in the Lab as appropriate. Survey available research and incorporate methods and machine learning algorithms as appropriate. Conduct original scientific research in the field of machine learning, bioacoustics, and bioengineering. 35%

Design, develop, integrate, test, implement, and maintain complex software applications to automatically detect and classify bird vocalizations. Test performance of software and algorithms and assess usability, and stability. Debug new and existing software, create documentation, and provide end-user support, training, and consultation. 30%

Collaborate with other scientists and engineers to solve acoustic analysis problems with novel approaches. Prepare manuscripts for publication in scientific journals. Contribute to team brainstorming and problem-solving initiatives. Participate with the content preparation of technical reports and scientific manuscripts. Provide leadership in core research areas by providing training and technical presentations for internal and external audiences. Present research findings, methods, and engineering innovations at scientific conferences. 25%

Research and report ways to use existing or emerging technologies to further BRP's needs. Occasionally, assist with recruiting, interviewing, and training new staff members. In collaboration with others in BRP, define project specifications and requirements, craft project plans, schedules, and milestones. Collaborate on the development of grants, contracts, and project budgets. 10%

REQUIRED QUALIFICATIONS:

- PhD in engineering, computer science or related field, with particular focus in deep learning or signal processing.
- Demonstrated experience in algorithm development. Strong structured programming ability.
- Experience in scientific programming and the generation of highly complex computer code in Python or Matlab.
- Experience developing software tools and algorithms to process acoustics data and applying signal and image processing techniques and theory to visual and acoustic pattern recognition problems required.
- Ability to conduct original research from conception to completion and to develop innovative technical solutions.
- Experience in literature review and publishing scientific papers.
- Experience with grant writing and budget development helpful.
- Ability to work effectively both in a team and independently.
- Must have strong communication skills, efficient scientific writing capability, and be proficient in spoken and written English. Must be able to communicate technical information to nontechnical users.

PREFERRED QUALIFICATIONS:

- Experience in acoustic ecology will be advantageous.
- Hands-on experience with deep learning tools such as Tensorflow, Caffe, Theano or Torch.
- Experience in embedded applications and/or large scale data systems.
- Knowledge of software analytical and statistical tools, as well as general tools for graphing and figure drawing.
- Experience with gcc, GNU Make, autotools, and shell scripting. Some experience with Apache and nginx configuration.
- Knowledge of web technologies such as Django, Javascript, jquery, HTML and API design is a plus.

APPOINTMENT:

This is a two-year appointment; appointed annually with a potential for extension depending on performance and availability of funding and available work.

SUPERVISION:

Reports directly to the Program Director within the Bioacoustics Research Program.

SUPERVISION EXERCISED:

May provide direction and guidance to BRP graduate students.

Diversity and inclusion are a part of Cornell University's heritage. We're an employer and educator recognized for valuing AA/EEO, Protected Veterans, and individuals with Disabilities.