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

POSITION: **Post Dr Associate**
                       Early Career Scientist - Acoustic Monitoring of Biodiversity

START DATE: Upon Completion of Search

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

POSITION SUMMARY:

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

This position will contribute to the Cornell Lab's efforts to build detection and classification models that accurately identify a wide variety of bird vocalizations in challenging acoustic environments (for more information visit birdnet.cornell.edu).

Collaborate with computer scientists, acoustic engineers, analysts and ecologists to tackle two primary challenges: 1) reliably detect the occurrence of a bird vocalization in a continuous audio stream at varying background noise conditions; and 2) correctly classify these calls, which may come from a large number of different species (sometimes several hundred), to the species level.

DUTIES AND RESPONSIBILITIES

Conduct original scientific research under the direction of Holger Klinck in the field of machine learning, bioacoustics, and bioengineering. Research novel machine learning algorithms, with a focus on deep learning that can be applied to the detection and classification of bird vocalizations. Collaborate with scientists and engineers to solve acoustic analysis problems with novel approaches. Survey available research and incorporate methods and machine learning algorithms as appropriate. 35%

Collaborate on the design, development, integration, testing, implementation, and maintenance of complex software applications to automatically detect and classify bird vocalizations. Test performance of software and algorithms and assess performance, usability, and stability. Contribute to team brainstorming and problem-solving initiatives. Debug new and existing software, create documentation, and provide end-user support, training, and consultation. 30%

Prepare manuscripts for publication in scientific journals. Assist 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 as requested. 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. Assist with the development of grants, contracts, and project budgets. 10%

REQUIRED QUALIFICATIONS:

Ph.D. in engineering, computer science or related field, with particular focus in deep learning or signal processing. Demonstrated experience in algorithm development and 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 collaborate and conduct research, from conception to completion. Must have the ability to develop innovative technical solutions. 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. Experience in literature review and publishing scientific papers. Experience with grant writing and budget development helpful. Hands-on experience with deep learning tools such as TensorFlow, Caffe, Theano or Torch. Experience developing 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.

SALARY:

Commensurate with experience

SUPERVISION:

Holger Klinck, Director of the Bioacoustics Research Program

SUPERVISION EXERCISED:

Provide occasional direction to undergraduate and 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.