



Oak Ridge Institute for Science and Education
RESEARCH PARTICIPATION PROGRAM For the
NATIONAL GEOSPATIAL-INTELLIGENCE AGENCY (NGA)

Visiting Scientist Fellowship Program

Computer Vision: Models of Vision and Image Properties Project in the Reston, VA area

PROJECT #NGA FY2008-08

The National Geospatial-Intelligence Agency (NGA) provides timely, relevant, and accurate geospatial intelligence in support of national security objectives. Geospatial intelligence is the exploitation and analysis of imagery and geospatial information to describe, assess, and visually depict physical features and geographically referenced activities on the Earth. Information collected and processed by NGA is tailored for customer-specific solutions. By giving customers ready access to geospatial intelligence, NGA provides support to civilian and military leaders and contributes to the state of readiness of U.S. military forces. NGA also contributes to humanitarian efforts such as tracking floods and fires, and in peacekeeping. NGA is a member of the U.S. Intelligence Community and a Department of Defense (DoD) Combat Support Agency. Headquartered in Bethesda, Md., NGA operates major facilities in the St. Louis, Mo. and Washington, D.C. areas. The Agency also fields support teams worldwide.

PROJECT DETAILS

An appointment is available at the NGA InnoVision Basic and Applied Research Office.

NGA is developing a suite of adequacy evaluations for computer vision tools. The evaluations will be built on properties of remotely sensed images that appear to be sources of difficulty in image understanding. The effort includes identification of image and algorithm characteristics frequently associated with failure of computer vision approaches. Questions of interest include: Can certain scene statistics be associated with failure in specific types of tasks? How are those statistics dependent on image resolution? Can a canonical test set be derived for computer vision algorithm evaluation? How should the test set vary by task? The Visiting Scientist will develop and test benchmarks and figures of merit, assemble test data, design benchmark tests, and consult on the use of the prepared test procedures. NGA anticipates using the fruits of this effort to identify priorities for future research and to assess progress toward NGA goals.

This appointment includes, but is not limited to, the following:

- Immersion in NGA analysis activities to identify opportunities to apply known methods, tools and techniques,
- Close work with government, university, and contractor scientists and engineers to monitor progress in relevant domains, to evaluate research results, and to determine the feasibility of using such methods,
- Planning and executing original research, and
- Assembling a corpus of ground-truthed data

INDIRECT BENEFITS OF POSITION

Selected Visiting Scientists will have the opportunity to perform research on topics of interest to the U.S. Government. NGA's extensive partnering relationships with other government agencies will expose Visiting Scientists to a broad government research community. Visiting Scientists will have the opportunity to meet government scientific decision-makers, and learn directly from them about the role of scientific research in government activities. Furthermore, Visiting Scientists have the opportunity to learn how research products transition from the proof-of-concept stage to integrated production systems.

ELIGIBILITY

- Applicants should be pursuing or have received a Doctoral Degree in computer science, computational neuroscience, statistics or a related discipline within the last five years or should have completed all requirements for the degree on or about the starting date. Students who have not completed their degrees should have completed all required courses and qualifying



Oak Ridge Institute for Science and Education
RESEARCH PARTICIPATION PROGRAM For the
NATIONAL GEOSPATIAL-INTELLIGENCE AGENCY (NGA)

examinations. Current college or university faculty members on sabbatical are also eligible. Other applicants will be considered on a case-by-case basis.

- Applicants should have a research interest or experience in one or more of the following topics: computer vision, computational neuroscience, remote sensing, natural scene statistics, as well as having excellent verbal and written communication skills.
- U.S. citizenship is required for the applicant. Please see further eligibility under security requirements.
- A background check will be conducted for an SCI security clearance. Completion of a Questionnaire for National Security Positions is required. Details under security requirements.
- NGA is a drug-free workplace. Initial and random drug tests will be conducted.

BASIS OF SELECTION

Participants will be selected based on research interests stated in a 2-4 page research proposal, relevant experience, academic performance, overall technical expertise, publications, recommendations, and compatibility of background with basic and applied research programs and projects at NGA and/or the host Installation.

RESEARCH PROPOSAL

The research proposal is a concise statement of the proposed research interest, including goals and anticipated outcomes, work products, methodologies, hypothesis, if appropriate, and timeline. An explanation of the relationship to the candidate's previous work or research experience is desirable. Relevant benefits and relationship to the NGA mission and objectives should also be included. The research proposal is a significant component of the selection criteria. There is a four-page limit to the proposal. NGA and the selected candidate will work cooperatively to define mutual research assignments and goals in support of the NGA mission and the Visiting Scientist's educational pursuits.

APPOINTMENT TERM AND WORK ENVIRONMENT

The initial appointment is for **one year** and may be renewed for an additional year based upon recommendation of NGA and subject to availability of funds. This is a **full time** residency appointment at NGA. Work will require SCI clearances and drug testing, and work will not begin until all security processes and drug testing are completed successfully. During the entire period of the award, participants must devote their activities to the approved research program and must be in-residence at an NGA facility in the Reston, VA area, not at their home institution or any other site. NGA approval is required before participants may accept additional monetary aid or other remuneration from another fellowship appointment, or similar grant during the period of award.

Participants will be working in a classified environment. Approval for any publication of articles or presentations during the appointment is subject to the NGA process for public release of information. The requirement for publications and presentations to undergo a NGA public release process extends beyond the term of the appointment when a research product, article or presentation contains information directly arising from participation in the appointment. For inventions conceived of or reduced to practice during the appointment, the fellow shall assign to NGA a perpetual world-wide royalty-free non-exclusive irrevocable license to practice the invention on behalf of the Government. A fellow may hold a copyright in information created by the fellow during the appointment.

COMPENSATION

The participant will receive a monthly stipend. The stipend rate is determined based upon level of education, training, and experience. Inbound travel and moving expenses may be considered and reimbursed according to established policies. Limited travel and other costs will also be reimbursed for training related to the project as approved by ORISE and the host installation. The participant does not become an NGA employee and there are no fringe benefits paid.



Oak Ridge Institute for Science and Education
RESEARCH PARTICIPATION PROGRAM For the
NATIONAL GEOSPATIAL-INTELLIGENCE AGENCY (NGA)

The participant must show proof of health and medical insurance. Health plans are available through the Oak Ridge Institute for Science and Education for Postgraduate Internship participants. The monthly stipend is intended to cover costs for health and medical insurance. NGA does not provide additional compensation for these expenses.

APPLICATION and DEADLINE

Applications should be submitted by **December 31, 2009**. Applications will be processed after that date, but those received by December 31, 2009 will be given preference. The Visiting Scientist Program for NGA is administered by the Oak Ridge Institute for Science and Education. A complete application package consists of

- Application form or a current curriculum vitae containing the information on the form
- 2 completed reference forms
- 2-4-page research proposal
- Optional demographic form

Please reference **Project #NGA FY2008-08** when calling, emailing, or writing for information. For immediate consideration applicants may forward resumes or vitas to the email address listed at the end of this announcement. Additional information and application material can be found on the following website www.ornl.gov/Maryland.

SECURITY REQUIREMENTS

The program is open to qualified U.S. citizens ONLY without regard to race, sex, religion, color, age, physical or mental disability, national origin, or status as a Vietnam era or disabled veteran. All members of immediate family (to include parents, stepparents, siblings, children, stepchildren and cohabitants) must be citizens of the United States when the applicant applies.

- The "Questionnaire for National Security Positions", Standard Form 86 (SF-86) and "Fingerprint Chart", Standard Form 87 (SF-87) September 04 must be completed by the selectee to initiate a background investigation. The SF-86 can be found at <http://www.opm.gov/forms/html/sf.asp>. ***These forms must be received within two weeks of selection for an appointment and required clarification must be completed within two weeks of request.***
- Top Secret security clearance with access to Sensitive Compartmented Information (SCI) required (may take 4-5 months to complete). Applicants who claim dual citizenship or hold foreign passports are not eligible for DoD granted security clearances. Clearance determinations are based upon careful consideration of the following:
 - o Allegiance to the United States
 - o Foreign Influence
 - o Foreign Preference
 - o Sexual Behavior
 - o Personal Conduct
 - o Financial Considerations
 - o Alcohol Consumption
 - o Drug Involvement
 - o Emotional, Mental, and Personality Disorders
 - o Criminal Conduct
 - o Security Violations
 - o Outside Activities
 - o Misuse of Information Technology Systems
- Applicants must undergo a comprehensive background investigation and be adjudicated in accordance with the guidelines set by "Director of Central Intelligence Directive 6/4" and DoD



Oak Ridge Institute for Science and Education
RESEARCH PARTICIPATION PROGRAM For the
NATIONAL GEOSPATIAL-INTELLIGENCE AGENCY (NGA)

5200.2-R, "Department of Defense Personnel Security Program Regulation". Available, reliable information about the person, past and present, favorable and unfavorable, will be considered in reaching a determination. Each case will be judged on its own merits, and any doubt concerning personnel being considered for access to classified information will be resolved in favor of national security.

- A counterintelligence polygraph may be required.
- NGA is a drug-free workplace. Initial and random drug tests will be conducted.

ORAU/ORISE Maryland Office
4692 Millennium Drive, Suite 101
Belcamp, MD 21017
Email : Recruiter@orau.org
Fax: (410) 306-9306
www.ORAU.org/Maryland