



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

**Visiting Scientist Fellowship Program
Methods and Approaches to Visualization**

PROJECT #NGA-LC-2011-021

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. 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

Imagery and Geospatial Scientists at NGA conduct research and integrate new and leading-edge technologies into NGA's operational environment, and must effectively represent and communicate complex data patterns and scientific results to analysts and decision makers. NGA is seeking a visiting scientist with a strong background in scientific visualization, graphic design, computer science, human-computer interaction and presentation of geographic data. Experience in cartography, geography, and remote sensing is a plus.

The visiting scientist would have the opportunity to apply novel algorithms to NGA's complex datasets, including 3D routing, multidimensional data, and spatio-temporal datasets. NGA is particularly interested in candidates seeking to apply new visualization methods to complex data in order to communicate scientific results. Publication opportunities might include analyses of presentation effectiveness or evaluations of alternative presentation approaches to conveying complex content.

This appointment may include, but is not limited to the following tasks:

- Immersion in NGA analysis activities.
- Developing or applying methods that go beyond traditional visualization approaches.
- Developing computer graphic applications using OpenGL. Application of new visualization tools and methods to NGA data sets.
- Applying new visualization techniques to complex, multi-source data (design, implementation, and evaluation).
- Experimenting with ways to visualize multiple forms of uncertainty (design, implementation, evaluation).
- Preparing and presenting internal seminars or training on improved visualization practices.
- 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.



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INDIRECT BENEFITS OF POSITION

Selected fellows will have the opportunity to perform research on topics of interest to the U.S. Government and to interact with leading scientists performing research and/or advising NGA. NGA's extensive partnering relationships with universities and other government agencies will expose fellows to a broad research community. Program participants will have the opportunity to meet government decision-makers and learn directly from them about the role of scientific research in addressing complex, real-world (i.e., operational) needs. Furthermore, fellows have the opportunity to learn how research products transition from the proof-of-concept stage to integrated production systems.

ELIGIBILITY

- **Applicants should have received a Master's degree or be within 2 years of attaining a Doctoral Degree. Applicants who have completed a doctorate within the last five years will also be considered. Relevant disciplines might include: scientific visualization, computer science, human-computer interaction, geography or a related discipline.**
- 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: scientific visualization, visual analytics, computer graphics, and human computer interaction. Experience in cartography, geography and remote sensing is a plus. Applicants should have a working knowledge of quantitative analytic techniques.
- Candidates may be asked to provide a portfolio or examples of work.
- Applicants should have experience in working within a research environment and show an ability to plan and execute specific research projects, and to meet task deadlines and goals. Applicants should have 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 a Sensitive Compartmented Information (SCI) security clearance. Completion of a Questionnaire for National Security Positions is required. Details can be found under the Security Requirements section. Visiting scientists are also subject to Counterintelligence Polygraph examinations in order to maintain access to Top Secret information.
- NGA is a drug-free workplace. Initial and random drug tests will be conducted.

BASIS OF SELECTION

Participants will be selected based on a 1-2 page maximum statement of research interests, 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 INTERESTS

The statement of research interests should describe previous research experience and outline the relevance to this project. The research interest statement is a significant component of the selection criteria and should be no longer than two pages. NGA and the selected candidate will work cooperatively to define mutual research assignments and goals in support of the NGA mission and the candidate's educational pursuits.



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APPOINTMENT TERM AND WORK ENVIRONMENT

The initial appointment period is for one year. The appointment 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 with 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 or other approved facility and not at their home institution. NGA operates major facilities in the St. Louis, MO and the Washington, D.C. area. D.C. area facilities will move to Springfield, VA, in 2011. 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. An intern or fellow may hold a copyright in information created by the intern or 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 the Oak Ridge Institute for Science and Education (ORISE) and the host installation. The participant does not become an NGA employee and there are no fringe benefits paid.

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

APPLICATION

Applications are accepted and reviewed on an ongoing basis. Selections are made as openings occur throughout the year. NGA expects there to be multiple positions. 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
- 1-2 page statement of research interests
- Optional demographic form

Please reference **Project #NGA-LC-2011-021** when calling, emailing, or writing for information. For immediate consideration applicants may forward their resumes or *curriculum vitae* 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.



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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.

- 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. ***Instructions for completing these forms will be provided following appointment acceptance. All documentation must be completed within two weeks of appointment acceptance 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). As a mandatory prerequisite for the appointment to this facility, the applicant must be a U.S. Citizen. 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 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 will be required.
- NGA is a drug-free workplace. Initial and random drug tests will be conducted.

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