



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

Visiting Scientist Fellowship Program
Mathematics of Complex Networks for GeoINT Analysis Project in the Reston, VA area

PROJECT #NGA FY2008-05

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 analysts need to capture and analyze spatial and temporal aspects of both manmade systems used for communication, commerce, and other infrastructure, and of natural systems that underlie physical, biological, and social phenomena. Many such network systems are considered complex because they have a non-trivial topological structure with a very large number of diverse components that exhibit nonlinear interactions. These networks are too complex for conventional methods of analysis.

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 mathematicians to define research problems of particular relevance to GeoINT, to evaluate research results, and to determine the feasibility of using such methods for GeoINT,
- Planning and executing original research,
- Applying theories, building models, or performing empirical studies to address geospatial questions concerning complex networks.

ELIGIBILITY

Applicants should have received a Doctoral Degree in mathematics or statistics or related discipline within three years of the desired starting date, or completion of all requirements for the degree should be expected on or about the starting date. Current college or university faculty members on sabbatical will also be considered. 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: graph theory, statistical physics, nonlinear dynamics and chaos in deterministic systems, topology, and geostatistics and excellent verbal and written communication skills. 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. Please see further eligibility under security requirements.

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.



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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.

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.

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 appointment is full time at the host installation.

SECURITY REQUIREMENTS

- 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 5200.2-R, “Department of Defense Personnel Security Program Regulation”. Available, reliable



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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.

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

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.

Please reference **Project #NGA FY2008-05** when calling, emailing, or writing for information. For immediate consideration applicants may forward resumes or vitas to the email address listed below. Additional information and application material can be found on the following website www.oraug.org/Maryland.

Oak Ridge Institute for Science and Education

4692 Millennium Drive

Suite 101

Belcamp, MD 21017

Email: Recruiter@oraug.org

Fax: (410) 306-9306

www.ORAUG.org/Maryland