CALL FOR PROPOSALS

RENCI @ North Carolina State University Faculty Engagement Program in Applied Scientific and Information Visualization

Due October 22, 2010

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The RENCI @ North Carolina State University (NCSU) Faculty Engagement Program provides faculty members and researchers of all domains and disciplines at NCSU the opportunity to address pressing research issues that stand to benefit from the addition of advanced scientific or information visualization expertise. In close partnership, awardees will have access to RENCI engagement center resources and staff, including use of the RENCI engagement facilities on the NCSU campus. They will collaborate in a multi-disciplinary environment and will be able to leverage the significant technologies deployed by RENCI, including PhD-level expertise in applied scientific and information visualization.

The goal of the program is twofold: 1) to expand the use of advanced visualization tools, expertise, and technologies by members of the NCSU faculty towards advancing their work to new levels of academic achievement, and 2) to set the stage for future externally funded proposals and awards. Successful applicants will be expected to generate concrete deliverables such as new methods, models, applications, or prototypes that can be used as the basis to develop larger efforts supported with extramural funding.

OVERVIEW

The Renaissance Computing Institute (RENCI) is a major collaboration first established by North Carolina State University, Duke University and the University of North Carolina at Chapel Hill in January 2004. The RENCI mission was expanded in 2005 with recurring funding from the State of North Carolina. RENCI is committed to fostering multidisciplinary collaborations with scientific communities, research institutes, businesses, government agencies, humanities and social science scholars, students, underserved audiences, artists, and educators across the state of North Carolina, the nation, and the globe.

RENCI has designed and deployed the most advanced statewide distributed visualization infrastructure in the country, and its highly regarded visualization staff includes Ph.D.-level experts in computer graphics and the scientific and information visualization and visual analytics subfields. Information visualization is defined as visual representations of abstract data to reinforce human cognition thus enabling the viewer to gain knowledge

about the internal structure of the data and causal relationships in it. Scientific visualization involves the multidimensional rendering of scientific data and phenomena into meaningful images that are recognizable and realistic. Both fields allow emergent patterns in data to be visually ascertained and explored that would not otherwise be accessible from relationships in underlying database structures. Visual Analytics (VA) is a related field that combines standard methods in data mining and retrieval, exploratory data analysis, and visualization to assist in the exploration of massive data and generate insight into complicated phenomena in a variety of disciplines in science and engineering.

Additionally, the RENCI visualization staff has developed a highly capable extensible map-based visualization environment.

More information about RENCI and the visualization group can be found at www.renci.org and http://www.renci.org/focus-areas/visualization

NCSU ENGAGEMENT CENTER
RENCI's Engagement Center on the NCSU campus opened in spring 2007 and supports the use of visualization technology and advanced computational methods to explore issues in science, engineering, and social sciences. Located in the Partners I Building on NCSU's Centennial Campus, the facility features a unique high-resolution 14.5-foot by 8-foot visualization wall shown in Figure 1, high-definition videoconferencing and networking capabilities, and an in-house staff of specialists in visualization and informatics available for consultation, collaboration and grant development support. An iRODS shared-file system ties the facility to five other RENCI engagement sites at universities around the state promoting collaboration, sharing of code and ideas, and serving as the basis for novel sponsored research. A Breakable Experimental Network (BEN) node at RENCI-NCSU provides researchers the opportunity to deploy and test the next generation of network architectures.

See http://www.renci.org/about/locations/renci-at-north-carolina-state-university

ELIGIBILITY
This program is available to full-time North Carolina State University faculty and researchers and is scheduled for duration of one year with a critical review six months into the project. Short extensions may be considered depending on project status and potential impact of continuation. Awardees will be expected to be actively involved in collaborating with RENCI staff members at the RENCI Engagement Center in the Partners I Building during their appointment. Two proposals will be selected.
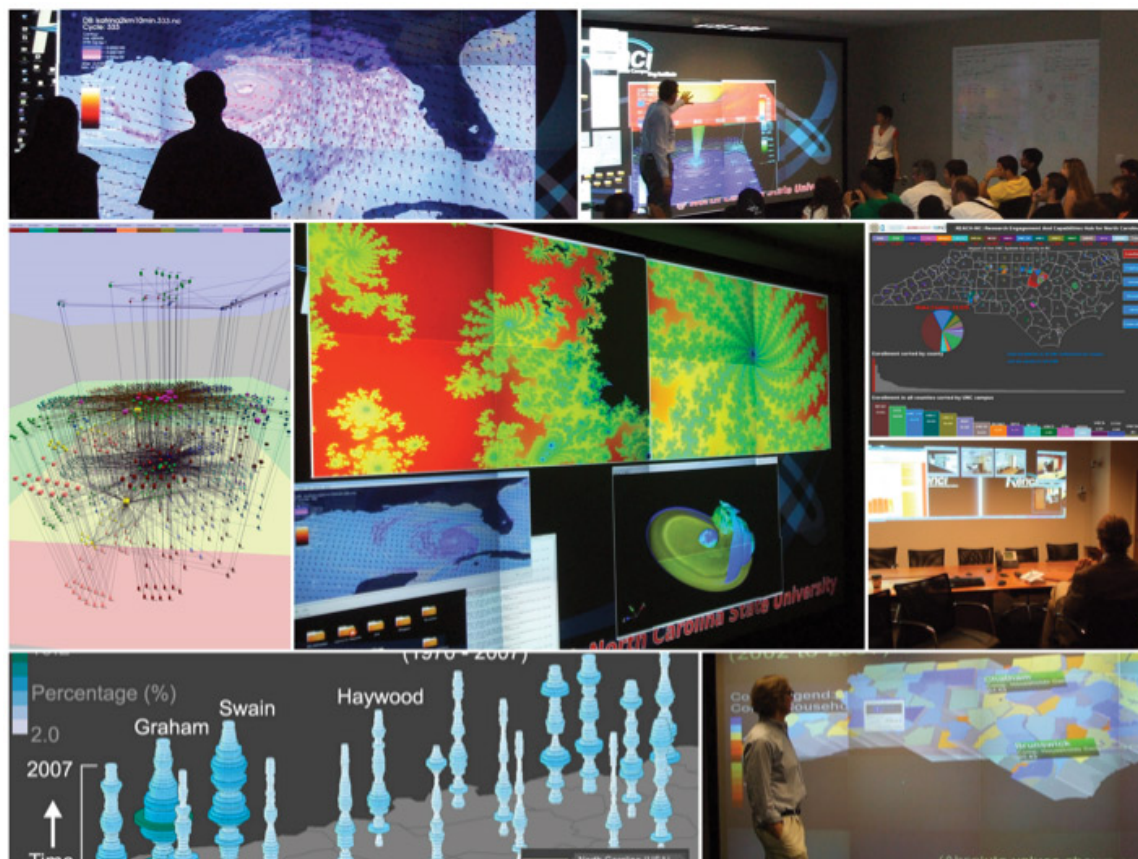
Figure 1

PROGRAM RESOURCES

Awardees will have the on-site support of visualization experts at RENCI's NCSU Engagement Center, as well as the intellectual support of the broader RENCI visualization group distributed across the three Triangle universities and other general RENCI staff. This support includes expertise in database management, data mining, scientific and information visualization, large data manipulation, image processing, and high-performance computing.

FINANCIAL STIPEND: Approximately $10,000-12,000 per award, in support of 2 anticipated awards.

APPLICATION PROCESS

Faculty members interested in the program should submit proposals by October 22, 2010, and the approximate term of the twelve-month engagement will commence January 2011. Proposals should be no more than four (4) pages. Documents should be double-spaced in a 10- or 12-point font with one-inch margins. The proposal should be understandable to readers outside the field of study and should indicate the benefits of collaboration with RENCI. **Proposals should be sent as PDF documents via email to Margie Wesley (mawesley@renci.org).**

PROPOSAL REQUIREMENTS

1. **Project description.** A clear and detailed statement describing the focus of the proposed work, the problem addressed by the work, any external sources of funding, and proposed plans for the project during the appointment time, including specific milestones. This description should outline how the proposed research will be advanced by incorporating visualization methodologies.

2. **Collaboration**. Applicants should articulate how they or their research team intends to work collaboratively with RENCI staff and the desired benefit expected from the collaboration.

3. **Summary of present activity.** Include a short discussion of recent and current projects and their relevance to the proposed effort.

4. **Sustainability.** Include a plan for the continuation of the work beyond the term of the program, including potential external funding opportunities.

5. **Biosketch**. A one-page biographical sketch is required and may be included as an addendum to the four-page proposal.

6. **Budget**. A one-page budget detailing proposed funding for personnel and equipment requirements.

EVALUATION

Proposals will be evaluated by a multidisciplinary committee comprised of NCSU faculty and RENCI staff applying the following criteria. Preference will be given to projects that exhibit:

- **Future Sustainability.** Projects that demonstrate a compelling need for visualization expertise and have a strong likelihood of leading to longer term, externally-funded research projects.

- **Impact and significance:** Projects that have the potential for broad scientific impact on society in general and the state of North Carolina in particular are encouraged.

- **Level of collaboration with RENCI and the Engagement Center.** Projects that show a strong level of collaboration with RENCI and that utilize the NCSU Engagement Centers' visualization expertise and technologies.

- **Project deliverables.** Projects that have concrete deliverables and products such as prototypes, models, methods or applications that can be deployed.

- **Multidisciplinary collaboration.** Projects that cross disciplines and involve cooperation among diverse experts and disciplines.

- **Need for novel visualization techniques**: Researchers are encouraged to present novel approaches that have not been tried before and that challenge the status quo with regards to the use of visualization techniques.

NOTIFICATION

All those who submit proposals will be notified of their status by November 30, 2010.

QUESTIONS

For questions or clarifications, please contact Ray Idaszak, Director of Visualization and Collaborative Environments at rayi@renci.org or 919-445-9671.