NCSA Faculty Fellows 2018
Kick off Presentation

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NCSA

- Interdisciplinary institute at Illinois reporting to VCR
  - One of original five NSF supercomputing centers: Provide state-of-the-art computing capabilities (hardware, software, HPC expertise) to nation’s scientists and engineers
- In total, > $1 Billion brought to U. Illinois since 1985
  - Approximately 220 staff (160+ technical/professional staff), two facilities
  - Operating NSF’s most powerful computing system: Blue Waters ($345M)
- Managing NSF’s national cyberinfrastructure: XSEDE ($145M)
- NCSA Industry: over 35 partners
NCSA

- 98 affiliate faculty
- 22 postdoctoral scholars with a postdoc program
- Graduate and undergraduate students
Petascale Computing Facility: Home to Blue Waters, Research Platform for Nation

**Modern Data Center**
- 90,000+ ft² total
- 30,000 ft² raised floor
- 20,000 ft² machine room gallery

**Blue Waters**
- 13PF, 1500TB, 300PB
- >1PF On real apps
- NAMD, MILC, WRF, PPM, NWChem, etc
- Projected $1.08B direct economic impact on Illinois’ economy

**Networking**
- 440 Gbits to outside world

NCSA
Example Projects, Centers, Facilities

- Innovative Systems Laboratory
- Advanced Visualization Laboratory
- eDream - Emerging Digital Research & Education in Arts Media Institute
- Visual Intelligence
- NCSA Industry program

LSST Data pipeline

XSEDE, national cyberinfrastructure

Browndog: Curation for “long tail” unstructured data

Data analysis for large scale simulation data
NCSA Strategic Plan

A deeper and integrative connection to the Illinois campus with faculty, postdocs and students.
NCSA Organization
http://www.ncsa.illinois.edu/about/directory

Bill Gropp
NCSA Director

Scott Wilkin
Deputy Director

Randy Butler
Senior Associate Director, Integrated Cyberinfrastructure

Donna Cox
Associate Director, Research & Education
NCSA Mission

- Address challenges or opportunities that are complex, multifaceted, and interdisciplinary aligned with potential to advance the Illinois Strategic Plan

- Pursue external funding opportunities through NCSA’s Research Focus Areas
  - Astronomy and Astrophysics
  - Computational Biology and Health
  - Culture and Society
  - Food, Energy, and Water
  - Computational Engineering
Grants run through NCSA do not impact the F&A returned to your home unit.

- **HOME UNIT**
  - 55% Central Admin.
  - 45% Home Academic College/Unit

- **NCSA**
  - 100% Earned
  - 27% Central Admin.
  - 28% NCSA
NCSA Faculty Fellows Program (est. 1999)

• Competitive program provides seed funding (up to $25K/award) for demonstration, start-up projects, workshops, and/or other activities with the potential to lead to longer-term collaborations and externally funded activities around research and development.
• Will fund 6 fellows for the 2018-2019 cohort

Important Dates
• Jan. 19, 2018: NCSA Faculty Fellows kickoff: solicitation goals and focus, help potential applicants understand its scope, answer questions
  10 am-12 pm, NCSA Lobby. Speed match-making event between potential applicants and NCSA staff and researchers.
• Feb. 18, 2018: Deadline to submit to the NCSA Fellowships Program
• April 2018: Target date for decisions
Current Fellows

• Patricia Gregg, Geology
  • A Data Assimilation Framework for Forecasting Volcanic Unrest

• Andre Schleife, Materials Science and Engineering
  • Computational Infrastructure for Collaborative Design of Semiconductor Nanocrystals
  • NCSA Staff: Michal Ondrejcek (ISDA)

• Zhizhen Zhao, Electrical and Computational Engineering
  • Deep Learning to the Rescue: Enabling the Search and Characterization of New Classes of Gravitational Wave Sources with Novel Applications of Machine Learning
  • NCSA Staff: Eliu Huerta (Gravity Group), Vlad Kindratenko (Innovative Systems Lab)

• Dallas Trinkle, Materials Science and Engineering
  • Materials Modeling Optimization
  • NCSA Staff: Michal Ondrejcek (ISDA), Dan Katz (Scientific Software Applications)
Current Fellows (cont’d)

• J. Stephen Downie
  • *Modeling the Massive HathiTrust Corpus: Creating Concept-Based Representations of 15 Million Volumes*
  • NCSA Staff: Craig Willis (ISDA), Donna Cox (R&E)

• Anita Chan, Media and Cinema Studies
  • *Transdisciplinary Convergence in Situated Research Environments: Mapping NCSA across the UI Campus*
  • NCSA Staff: Donna Cox (R&E)

• Zeynep Madak-Erdogan, Food Sciences and Human Nutrition
  • *Optimization of Agent-Based Models to Improve Infectious Disease Management*
  • NCSA Staff: Dora Cai (Advanced Application Support), Luda Mainzer (NCSA Genomics), Vlad Kindratenko (Innovative Systems Laboratory)

• Ruby Mendenhall, Sociology; African American Studies
  • *Using Wearable Sensors and Affective Diaries to Document How Violence Affects Public Life and Public Health*
  • NCSA Staff: Kiel Gilleade (Culture & Society), Luda Mainzer (NCSA Genomics)
Projects are encouraged that build on:

- NCSA focus research areas:
  - Astronomy and Astrophysics
  - Computational Biology and Health
  - Culture and Society
  - Food, Energy, and Water
  - Computational Engineering

- and NCSA major projects and programs:
  - Blue Waters (Contact: Greg Bauer)
  - XSEDE (Contact: Jay Alameda)
  - Innovative Systems Laboratory (Contact: Volodymyr Kindratenko)
  - Advanced Visualization Laboratory (Contact: Donna Cox)
  - Cybersecurity (Contact: Adam Slagell)
  - National Data Service (Contact: Kenton McHenry)
  - Midwest Big Data Hub (Contact: Melissa Cragin)
  - Innovative Software and Data Analysis (Contact: Kenton McHenry)
  - NCSA Industry (Contact: Seid Koric)
  - Visual Intelligence Group (Contact: Colleen Bushell)
Fellows Responsibilities to NCSA

• Responsible for contributing to the NCSA academic core;

• Contribute to and take part in large collaborative funding efforts;

• Act as liaisons with their home departments.
NCSA Responsibilities to Fellows

• Provide a 0% NCSA appointment;

• Fellows are provided drop-in office space at NCSA;

• Have direct access to NCSA research scientists, staff, and services;

• Where possible, NCSA will provide access to compute, data, and other cyberinfrastructure, including software licenses, needed for fellowship projects.
Collaboration with NCSA Staff

• Strongly encouraged to maintain an active, close collaboration with NCSA staff for the duration of the fellowship, discuss these collaborations in detail with the NCSA staff involved before submitting proposals.

• Describe the nature of the collaboration, anticipated staff time commitment, source of support for staff involvement.

• Support for NCSA staff can come from existing project or grant funds or can be requested as part of the proposal from the NCSA Director’s Office*.

*Requests of up to one month effort are the most likely to be supported. Staff should discuss their plans with their supervisor.
Proposal Preparation and Submission
http://www.ncsa.illinois.edu/about/org/fellowships/submissions

• Competitive proposals will include:
  • Individual or multiple Illinois faculty
  • A well-defined activity that requires close collaboration with NCSA application and technical staff and possible use of NCSA computational resources or facilities.
  • A plan that will lead to new external funding

• Easychair used for proposal submission, beginning January 26th (see “Proposal Preparation and Submission” on Fellow Program website)
Review Criteria

• Significance
  • Does the project address an important problem or a critical barrier to progress in the field?
  • Is the project interdisciplinary and relevant to the Illinois campus and to NCSA strategic plan?
  • Is there a strong scientific promise for the project?
  • If the aims of the project are achieved, how will scientific knowledge, technical capability, and or clinical practice be improved?

• Investigators
• Innovation
• Approach
• Environment
Review Criteria (cont’d)

• Significance
• Investigators
  • Does the project include NCSA staff as integral contributor to the project?
  • Are the PI(s), collaborators, and other researchers well suited to the project?
  • Does the project include plan(s) to leverage NCSA scientific, technical, and management expertise, and/or leverage NCSA facilities and other major ongoing activities and programs?
  • Does the project include plan(s) for continued collaboration and pursue of external funding from Federal agencies, Foundations, or Industry?

• Innovation
• Approach
• Environment
Review Criteria (cont’d)

• Significance
• Investigators
• Innovation
  • Does the project challenge to seek to shift current research or clinical practice paradigms by utilizing novel theoretical concepts, approaches or methodologies, instrumentation, or interventions?
  • Are the concepts, approaches or methodologies, instrumentation, or interventions novel to one field of research or novel in a broad sense?
• Approach
• Environment
Review Criteria (cont’d)

• Significance
• Investigators
• Innovation
• Approach
  • Are the overall strategy, methodology, and analysis well-reasoned and appropriate to accomplish the scientific aims of the project?
  • Are potential problems, alternative strategies, and benchmarks for success presented?
  • If the project is in the early stages of development, will the strategy establish feasibility and will particularly risky aspects be managed?

• Environment
Review Criteria (cont’d)

- Significance
- Investigators
- Innovation
- Approach
- Environment
  - Will NCSA in which the work will be done contribute to the probability of success?
  - Does the project demonstrate a compelling need for the NCSA funding and involvement?
  - Are NCSA support, equipment and other physical resources available to the investigators adequate for the project proposed?
Proposal Preparation- Required Documents

Proposals should consist of:

A. Abstract .........................................................(1/2 page)
B. Project Description ..............................................(4 pages)
   B.1 Project Significance
   B.2 Investigators
   B.3 Innovation
   B.4 Approach
   B.5 Environment
C. References (avoid using et. al)
D. Bios – each PI/co-PI ............................................(2 pages)
E. Budget and Budget Justification
F. *Letter(s) of Commitment .................................(1 page)

*Template may be found on the “Proposal Preparation and Submission” web page
Budgets

- Up to $25,000 over 12 months (appointments begin July 1, 2018).

- Fellowship funds can be used for the following purposes:
  - Research assistant support (GRA, postdoc, etc.)
  - Workshop support (to be held at NCSA)
  - Travel support—maximum of $1,500 for conference travel or travel to other sites
  - Faculty summer salary

- Project budgets do not need to include benefits, tuition remission, or overheads.

- Awards made are subject to the availability of funds, and review panel’s recommendations.
Next Week: Idea Acceleration Workshop – Jan. 26, 10am-12pm, NCSA Atrium

• Potential applicants encouraged to present 1 slide on:
  • project ideas and/or skills/resources needed from NCSA
  • Picture of yourself
  • Contact information (e.g. email address)
  • Submit slide to Amanda Lombardo (alombar@illinois.edu) by 4pm on January 25th

• NCSA staff will be on hand to share information on major NCSA program areas
Questions/Comments??