

PI: Yi Deng; **Co-PIs:** Malek Adjouadi, Armando Barreto, Xudong He, Naphtali Rishe

Florida International University, University Park, Miami, FL 33199

crest@fiu.edu

http://crest.fiu.edu

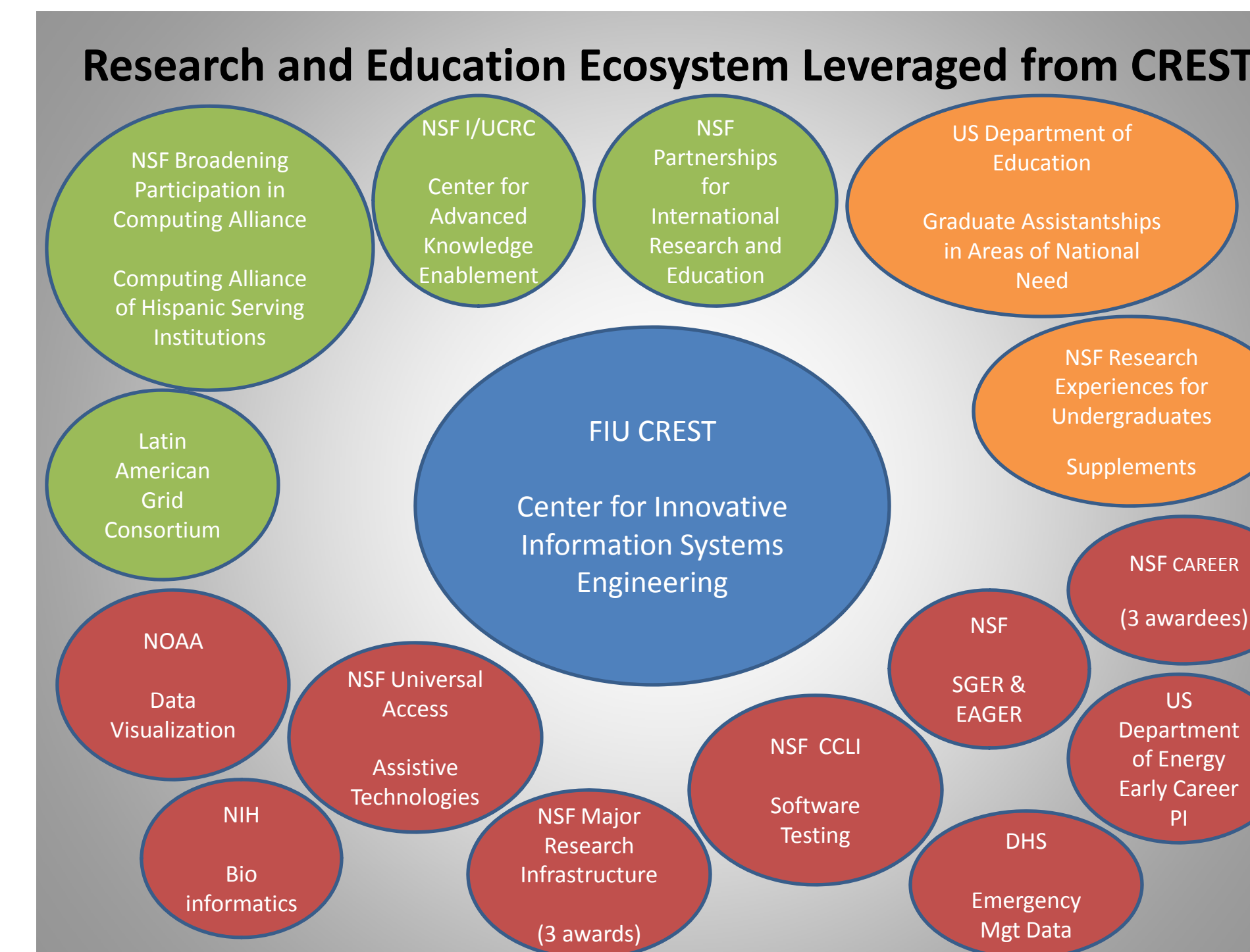
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Cutting-edge Interdisciplinary Research in Computer Science and Engineering

- Effective Access to Complex Multimodal Data with Applications in Disaster Mitigation
- Integrated Approach to Information Processing in Neuroscience
- Human Computer Interaction for Universal Access
- Complex System Modeling, Analysis, and Realization

Over 300 Publications

Research and Education Ecosystem



PIRE Research Model

- Goal: Radically simplify the manner by which domain experts develop, use, and maintain applications over distributed computing resources
- Research focus: Transparent Cyber-Infrastructure Enablement – building application-layer virtualization
- Approach:
 - Driven by critical applications with high societal impact
 - Focusing on the end-to-end, transformative innovation
 - Common methodologies, services and tools across applications in selected domains
 - Streamlined integration of fundamental research and technology innovation
 - Maximizing complementary expertise, infrastructure and resources of international academic, industry and government partners, as well as established LA GRID resources

A First Class PIRE Partnership Team

- United States: Florida International University, Florida Atlantic University, IBM Research Center (NY, CA)
- Mexico: Instituto Tecnológico y de Estudios Superiores de Monterrey (ITESM), Universidad de Guadalajara (UG), Mexico Supercomputing Center (MEX)
- Spain: Barcelona Supercomputing Center, Universitat Politècnica de Catalunya (UPC)
- Brazil: Universidade Federal Fluminense
- Argentina: Universidad Nacional de La Plata (UNLP)
- China: Tsinghua University, IBM China Research Lab
- India: IBM India Research Lab, Indian Institute of Science
- France: Université de Rennes 1, INRIA

2009 PIRE – 18 Students in Brazil, China, France, India, and Spain this Summer

- \$15.7M in Contracts and Grants leveraged from CREST: NSF, Dept. of Energy, Dept. of Education, NOAA, DHS, NIH
- \$5M in Donations and Endowments leveraged: Ware Foundation, IBM
- CREST's programs have increased Hispanic enrollment in FIU's Ph.D. programs in computing from 13.3% to 29.4%
- Nearly 13% of the US population of Hispanic Computer Science Ph.D. students are enrolled in CREST's program
- 39 Ph.D.s graduated from CREST—33% have been underrepresented minorities and 38% have been women vs. US totals of 3% and 20% per year
- 50 M.S. graduates – 50% underrepresented, 28% women

Outreach and Recruitment

FIU Engineering & Computing Gala

- Hands-on CREST Research Demonstrations
- 1,500 school students each year
- VIP Guest Speakers: NSF's Joseph Bordogna, Elbert Marsh, Bruce Kramer

La Familia

- Hispanic Heritage Month
- Highlights Hispanic Contributions to IT & Engineering
- On-line Student Collaborative Events
- Hands-on Student Activities
- 60 Elementary school students

Programming Competitions

- CREST research presented at lunch
- Student Recruitment plus Teacher Information Sessions
- High School Team Competitions – 30 teams each year
- FIU Student Competitions – training for ACM Competition

Student Organizations

- ACM & UPE Honor Society: Tutoring, Peer Mentoring, Guest Speakers, Special Interest Groups
- Women in Computer Science: Study Groups, Networking Opportunities, Robotics Research & Robotics Outreach to Middle School Girls

Collaborative Research

1. Developing effective techniques for managing and providing access to data that varies in type, source, location, time, and certainty by addressing storage optimization, data management, indexing and search, query techniques, and data presentation.
2. An integrated imaging/signal processing approach that will result in comprehensive views of the human brain in greater depth and detail through faster, affordable, more effective, and less invasive methods.
3. Enabling any prospective computer user to interact with computer-based systems, regardless of their disability status and regardless of the interaction challenges derived from the context in which the interaction is taking place.
4. Essential methodologies for modeling complex systems, a unified underlying semantic model, fundamental methods for compositional model analysis, and model-driven engineering technologies.

