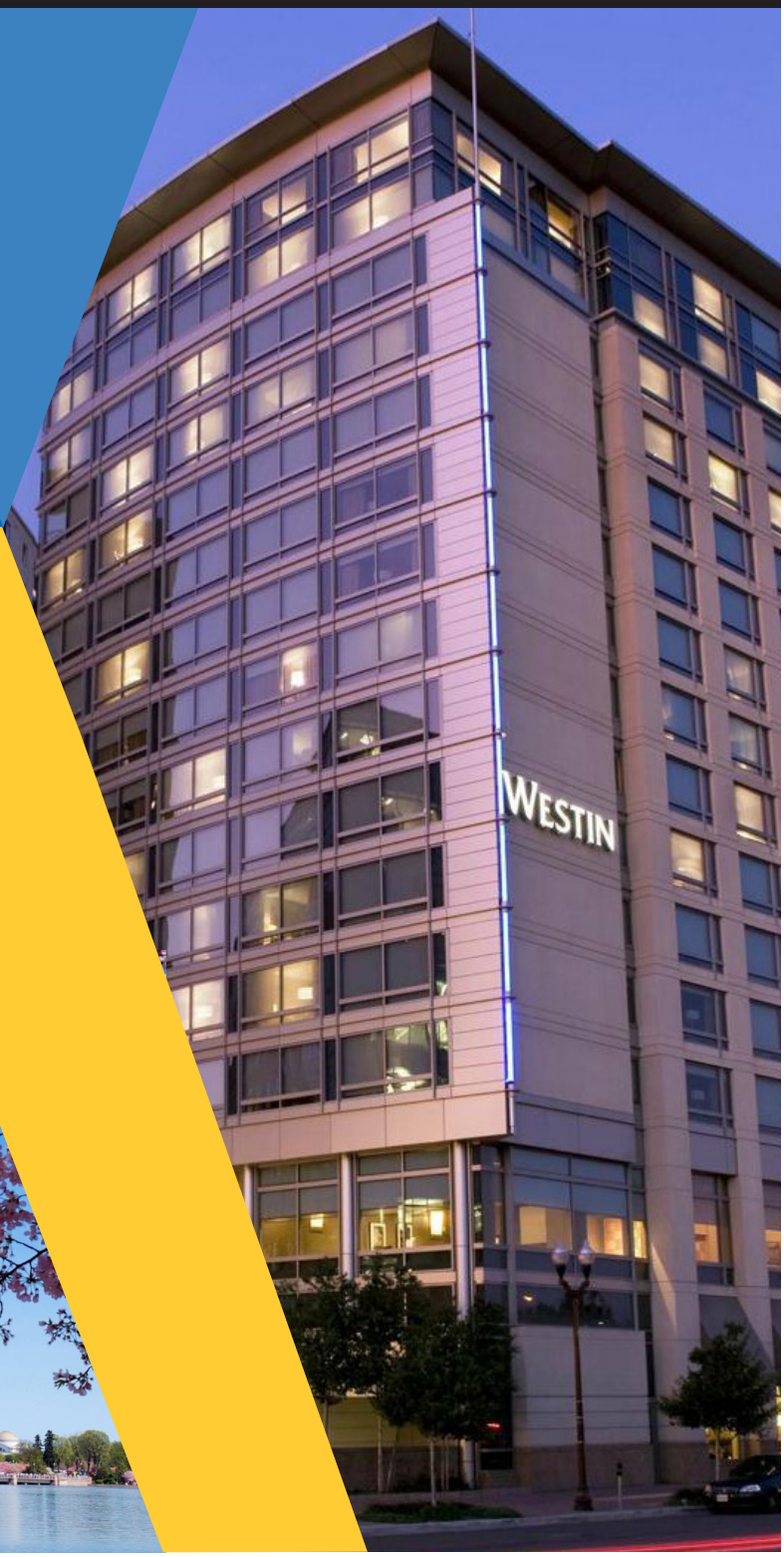
2017

NSF CISE REU SITE NEW PIs MEETING



Arlington, VA
March 22-23

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WELCOME

Welcome to the 2017 NSF CISE REU Site New PIs Meeting

It is with the greatest pleasure that we welcome you to the 2017 CISE REU New PIs meeting in the city of Arlington. We hope that you find the meeting informative and helpful in the following ways and more: sharing and understanding best practices, learning about new initiatives, networking, and community-building. We also hope that you are able to enjoy the many attractions the area has to offer.

The 2017 CISE REU New PIs meeting is focused on providing information concerning planning, implementing, and assessing REU programs as well as sharing information with fellow CISE REU PIs from around the country.

We wish to thank the organizers, presenters, mentors and staff for all of your hard work and help in preparing for the 2017 CISE REU New PIs meeting. We especially wish to thank the CISE Directorate of the National Science Foundation and the program of directors for all of their advice, support and encouragement given to PIs that contribute to making our REU programs as successful as possible.

Please do not hesitate to let us know how we can help to make this a successful and productive meeting for you and your site.

Sincerely,
THE ORGANIZING COMMITTEE

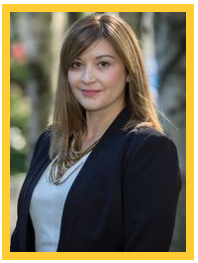
AGENDA | Thursday March 23rd

*All activities will take place at the **Westin, Ernest Hemingway Salon 2 & 3***

7:30 - 8:30 AM	**Breakfast (For all)**
8:30 - 8:45 AM	**Welcome and Introductions** *Harriet Taylor (NSF), and Stephen Gilbert (Iowa State University)*
8:45 - 9:10 AM	**1 Minute Madness Introductions**
9:10 - 9:25 AM	**REU Site Aspects- "Where are you now?"** *Stephen Gilbert, and Jamie Payton*
9:25 - 10:10 AM	**NSF Briefing for New PIs** *Harriet Taylor*
10:10 - 10:20 AM	**Break**
10:20 - 11:20 AM	**Discussion: Logistics and Recruitment** *Jamie Payton, and Stephen Gilbert*
11:20 - 11:50 AM	**Meet Your Own Program Director**
11:50 - 1:05 AM	**Lunch & Networking** **Keynote Speaker: Dr. Erwin Gianchandani** *(Deputy Assistant Director for CISE)*
1:05 - 1:40 PM	**REU PIs Evaluation Kit** *Audrey Rorrer*
1:40 - 2:30 PM	**Discussion: Research & Mentoring** *Jamie Payton, Stephen Gilbert*
2:30 - 2:40 PM	**Break**
2:40 - 3:30 PM	**Discussion: Professionalism & Ethics** *Jamie Payton, Stephen Gilbert*
3:30 - 4:00 PM	**Top Tips and Open Q&A**

ORGANIZING COMMITTEE

Stephen Gilbert
gilbert@iastate.edu
Iowa State University
Ames, Iowa



Jamie Payton
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Audrey Rorrer
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Charlotte, North Carolina

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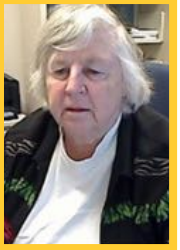

Harriet Taylor
Program Director, CISE/CNS
htaylor@nsf.gov

Rahul Shah
Program Director, CISE/CCF
rshah@nsf.gov

PARTICIPANTS LIST

PI	INSTITUTION	REGION
Archer, Camille	Michigan State University	Midwest
Ayanian, Nora	University of Southern California	West
Baskiyar, Sanjeev	Auburn University	South
Calyam, Prasad	University of Missouri-Columbia	Midwest
Chan-Tin, David	Oklahoma State University	South
Dilkina, Bistra	Georgia Institute of Technology	South
Duan, Lian	Hofstra University	Northeast
Hallstrom, Jason	Florida Atlantic University	South
Izurieta, Clemente	Montana State University	West
Katz, Daniel	University of Illinois	Midwest
Kautz, Henry	University of Rochester	Northeast
Leiss, Ernst L.	University of Houston	South
Lyman-Holt, Alicia	Oregon State University	West
Merz, Kenneth	Michigan State University	Midwest
Mohler, George	Indiana University Purdue University Indianapolis	Midwest
Namboodiri, Vinod	Wichita State University	Midwest
O'Kane, Jason	University of South Carolina	South
Perez, Alfredo	Columbus State University	South
Rodríguez, Fernando J.	University of Florida	South
Rosenberg, Burton	University of Miami	South
Spanias, Andreas	Arizona State University	West
Venkatasubramanian, Nalini	University of California	West
Wang, Bing	University of Connecticut	Northeast
Xin, Chunsheng	Old Dominion University	South
Xu, Songhua	New Jersey Institute of Technology	Northeast
Yang, Guowei	Texas State University	South

MEETING PARTICIPANTS

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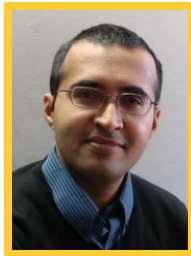

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vinod.namboodiri@wichita.edu
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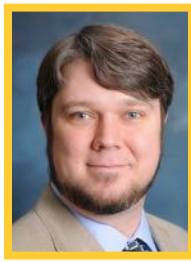

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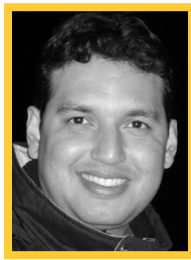

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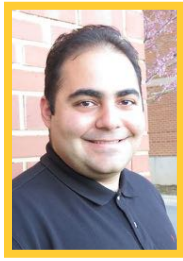
Columbus, Georgia



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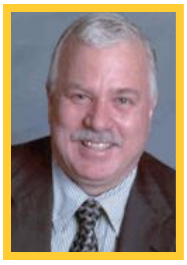

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1MM SLIDES ORDER

PI	INSTITUTION
Archer, Camille & Merz, Kenneth	Michigan State University
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Yang, Guowei	Texas State University

PI INTRODUCTION SLIDES

Kenneth M. Merz Jr. and Brian W. O'Shea

iCER ACRES (Adv. Comp Research)

Michigan State University

http://icer-acres.msu.edu

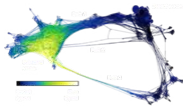
East Lansing, MI

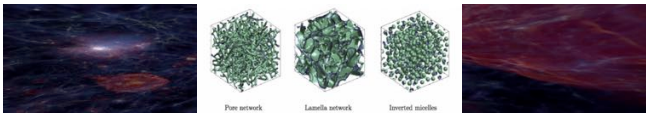
merzjrke@msu.edu and oshea@msu.edu

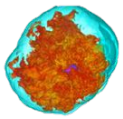
Research Areas: Computational and data science; parallel architectures; algorithms, models, software for high performance computing

Site active since: 2017

Unique Features of the Site: Student teams work with faculty mentors experienced in computational and data science and HPC research consultants experienced in enabling science on supercomputers, resulting a broad understanding of the research computing environment.







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Nora Ayanian

Robotics and Autonomous Systems

University of Southern California

website in development

Los Angeles, CA

ayanian@usc.edu

Research Areas: Cooperative robotics, Biologically-inspired robotics, Socially assistive robotics, Learning for robots, Aquatic robots, Wireless sensing & communication, Software-defined radars for UAVs

Site active since: New in 2017

Unique Features of the Site: Research trips to USC Information Sciences Institute, USC Institute for Creative Technologies, & NASA Jet Propulsion Lab; Participants live in student apartments on campus to build cohort experience; Concurrent RET site in the school of engineering

CISE REU New PI Meeting, Arlington, March 2017

PI INTRODUCTION SLIDES

Sanjeev Baskiyar

Parallel and Distributed Computing

Computer Science and Software Engineering
Auburn University
http://www.eng.auburn.edu/users/baskiyar
Auburn, AL
baskiyar@eng.auburn.edu

Research Areas: Computer Science, Electrical Engineering, Physics, and Neuro-informatics

Site active since: Summer 2017

Unique Features of the Site: Multidisciplinary, Energy Aware Computing
Topics:
--Thermal & energy aware computer systems
--GPS data correction
--Ion velocity ring instabilities in plasmas
--Low power location detection via deep learning & channel state finger-printing
--Brain science using machine learning in neuro-informatics

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Prasad Calyam

Consumer Networking Technologies

University of Missouri-Columbia
http://reu.rnet.missouri.edu
Columbia, MO
calyamp@missouri.edu

Research Areas: Software-Defined Networking, Visual Computing at the Network Edge, Social Health Networking for Eldercare, Body-Area Sensing and Emotion Recognition.

Site active since: 2007

Unique Features of the Site: Interns work in groups of 2 or 3; Faculty and Graduate Students serve as Mentors; MU Data Center Tour; Local School Visit

CISE REU New PI Meeting, Arlington, March 2017

PI INTRODUCTION SLIDES

D. Eric Chan-Tin

Big Data Analytics at OSU

Oklahoma State University
https://www.cs.okstate.edu/reu
Stillwater, OK
chantin@okstate.edu

Research Areas: Big Data Analytics, Data Visualization

Site active since: 2017 (new)

Unique Features of the Site: Participants will work in groups of two and rotate among the five phases of big data analytics: data collection, data cleansing, data analytics, data interpretation, and data visualization

CISE REU New PI Meeting, Arlington, March 2017

Bistra Dilkina

Civic Data Science

Georgia Institute of Technology
http://dssg-atl.io/
Atlanta, GA
bdilkina@cc.gatech.edu

Research Areas: Data Analytics, Machine Learning, Information Visualization

Site active since: 2017 (Data Science for Social Good program active since 2014)

Unique Features of the Site: All teams are co-located in the “Computing for Good” Lab. Each team of 3 students gets to work with a nonprofit, local or government agency on a data science project with social good impact.

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PI INTRODUCTION SLIDES

Songhua Xu and Lian Duan

Computational Data Analytics for Advancing Human Services

New Jersey Institute of Technology, Newark, NJ
Hofstra University, Hempstead, NY
http://reu.njit.edu
songhua.xu@njit.edu & lian.duan@Hofstra.edu

Research Areas: Computational data analytics, smart health, smart education, smart transportation

Site active since: 2018

Unique Features of the Site:

- It seeks to encourage students aiming toward careers in computer science, health care, education and business to become knowledgeable and excited about the immense potential of computational data analytics to impact societal outcomes.
- Each mentor breaks his/her research into small-scale research projects suitable for investigation by REU project teams.

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Jason O. Hallstrom

I-SENSE (NSF REU Site in Sensing and Smart Systems

Florida Atlantic University
http://isense.fau.edu/reu/reu-home-2017.php
Boca Raton, FL
jhallstrom@fau.edu

Research Areas: The Institute for Sensing and Embedded Network Systems Engineering (I-SENSE) hosts an intensive summer research program in sensing and smart systems for talented undergraduates from across the country.

Unique Features of the Site: Interdisciplinary projects: Battery-free leak monitoring, Adaptive traffic control, Vision-based violence detection, Smart grid control, Ocean current analysis, Robotic prosthetics, IoT security, Ambulatory monitoring, Compressive sensing, Motion tracking

FAU I-SENSE Division of Research Florida Atlantic University

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PI INTRODUCTION SLIDES

Clem Izurieta

Research and Development of Algorithms in a Software Factory

Montana State University (Bozeman, MT)
http://www.bobcatsoftwarefactory.com/nsf-reu-2017/
Bozeman, MT
clemente.izurieta@montana.edu

Research Areas: We focus in four areas: genomics, quality of systems, topological data analysis, and social network trustworthiness

Site active since: 2017 (prior REU Site: 2012-2014)

Unique Features of the Site: Various projects related to algorithm research in a Software Factory environment that requires students to work towards a working prototype.

softwarefactory
learn.share.grow

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Daniel S. Katz & Olena Kindratenko

INCLUSION

University of Illinois Urbana-Champaign
http://reu.ncsa.illinois.edu
Urbana, IL
dskatz@illinois.edu & kindrat2@illinois.edu

INCLUSION: Incubating a New Community of Leaders Using Software, Inclusion, Innovation, Interdisciplinary and OpeN-Science

Research Areas: Developing open source software and applying it across all areas of research

Site active since: 2017

Unique Features of the Site: Pairs of students from underrepresented communities and Minority Serving Institutions learn about software development and work on socially-impactful research centered around open source software, guided by multidisciplinary pairs of mentors

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PI INTRODUCTION SLIDES

Henry Kautz

Computational Methods for Understanding Music, Media, and Minds

University of Rochester
http://www.sas.rochester.edu/dsc/undergraduate/reu.html
Rochester, New York
gids-reu@rochester.edu

Research Areas: Machine Learning, Audio Engineering, Cognitive Science, Digital Humanities, Music Theory

Site active since: Summer 2017

Unique Features of the Site:

- Highly interdisciplinary research combining science, engineering, and humanities
- Every project is mentored by two faculty drawn from Computer Science, ECE, Brain & Cognitive Science, English, and the Eastman School of Music
- Examples: Using wide-spectrum imaging and computer vision to recover "lost" musical scores from ancient manuscripts; Automated music transcription; and more
- Goal: encourage students to pursue careers combining engineering and humanities

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Ernst L. Leiss

Data-Centric Computing

University of Houston
Department of Computer Science
www.cs.uh.edu/reu
coscel@cs.uh.edu

Research Areas: Security, integrity, and privacy; Image analytics; Computational physiology

Site active since: 2005

Unique Features of the Site:

Women 31%
African American 15%
Hispanic 15%
Asian 14%
Home college with limited research exposure 52%
GRE training

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PI INTRODUCTION SLIDES

Alicia Lyman-Holt

Robots in the Real World

Program Coordinator

http://robotics.oregonstate.edu/reu

Corvallis,Oregon

Alicia.lyman-holt@oregonstate.edu

Research Areas: Robotics

Site active since: 2014

Unique Features of the Site: Multidisciplinary program matching students from fields such as computer science, mechanical engineering, electrical engineering, mathematics, physics, social science with researchers working in similar fields. Students have the opportunity to learn broadly about the field of robotics with delving deeply into their specific project.

New this year: Targeting students with little (or no) research experience and/or students who have big outreach potential

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George Mohler

Data Science of Risk & Human Activity

IUPUI

https://www.datareu.com/

Indianapolis, IN

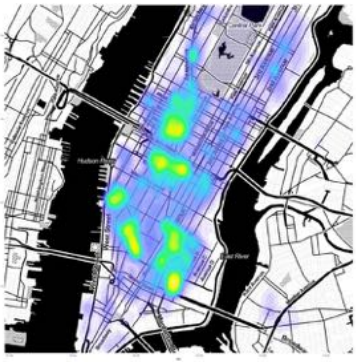
gmohler@iupui.edu

Research Areas: Learning to rank crime hotspots, point process modeling of conflict, deep learning for activity detection.

Unique Features of the Site:
-Week 1 data science bootcamp.

-Interdisciplinary project groups (CS/MATH/SCI/ENG).

-Several speakers from industry



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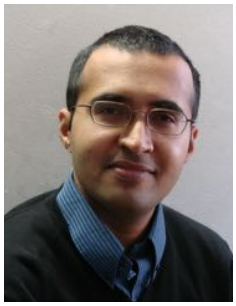
PI INTRODUCTION SLIDES



Vinod Namboodiri

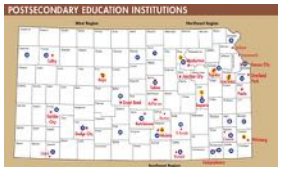
Networked Cyber-Physical Systems

Wichita State University
http://www.wichita.edu/NetCPSREU
Wichita, KS
Vinod.Namboodiri@wichita.edu

Research Areas: Indoor Localization and Mapping, Security and Privacy of Wearable Devices, Networking of UAVs, Cloud Computing, Cognitive Radios

Site active since: 2017

Unique Features of the Site: Only REU at Wichita State, only CISE-related REU in Kansas, feeds to Master's program in Computer Networking, Experiential Focus



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Jason O'Kane

REU in Applied Computational Robotics

University of South Carolina
http://reu.cse.sc.edu
Columbia, South Carolina
jokane@cse.sc.edu

Research Areas: Robot Perception and Planning, Human-Robot Interaction, Robots in the Field

Site active since: 2017

Unique Features of the Site: Trainees are required to identify a faculty mentor at their home institution who will assist them in completing their research and writing a final paper.

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PI INTRODUCTION SLIDES

Alfredo J. Perez

Security for Mobile Sensing

TSYS School of Computer Science
Columbus State University
http://www.reucsu.org
Columbus, GA
perez_alfredo@columbusstate.edu

Research Areas: Security, Privacy, Mobile Sensing, Sensor Networks

Site active since: 2017

Unique Features of the Site: Students will be co-located in a new cybersecurity lab, REU experience includes visits to datacenters from major financial sector companies such as TSYS/AFLAC

COLUMBUS STATE UNIVERSITY

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Fernando Rodríguez

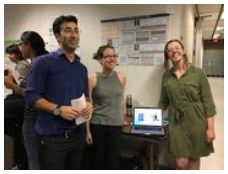
Intelligent Multimodal Human-Computer Interaction

University of Florida, Gainesville, Florida
www.cise.ufl.edu/research/imhci/
Fernando Rodríguez (fjrodriguez@ufl.edu)
PI: Kristy Elizabeth Boyer (keboyer@ufl.edu)

Research Areas • Mobile touch and gesture interaction for kids • Natural language dialogue to support teaching and learning • Embodied computer science education and affective computing • Brain-computer interfaces and culturally relevant computing • Virtual reality for training and learning

Site active since • Summer 2017

Unique Features of the Site • Located at one of the few universities in the US with a Human-Centered Computing Ph.D. program • Students join a thriving multidisciplinary research environment and work on real-world problems



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PI INTRODUCTION SLIDES

Burton Rosenberg

Scientific Computing for Structure in Big or Complex Datasets

University of Miami
www.cs.miami.edu/reu-scs
Miami, Florida
burt@cs.miami.edu

Research Areas: Scientific computing, bio-computing, computational chemistry, high performance computing, scientific visualization; neural nets, GPU, specialized computing models.

Site active since: 2017

Unique Features of the Site:
-Interdisciplinary across computer science, chemistry, and neurology departments

-Collaboration with medical school

-A research partnership with the Center for Computational Science – the University of Miami supercomputing center.

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Andreas Spanias and Jennifer Blain-Christen

Sensor Signal and Information Processing (SenSIP) Devices and Algorithms

SenSIP Center, ECEE, Arizona State University
https://engineering.asu.edu/sensip/reu-index-html/
Tempe, AZ85287-5706
spanias@asu.edu

Research Areas: Integrated Sensor Devices and Algorithms

Site active since: January 2017

Unique Features of the Site:
This three year REU site will recruit and train nine undergraduate students each summer and engage them in research endeavors on the design of sensors including student training in mathematical methods for extracting information from sensor systems. The investigators, along with a team of faculty advisors, will supervise a series of multidisciplinary projects in the design of integrated sensor systems. In addition to the planned projects, the faculty leaders of this program will organize a series of industry collaborative training activities for the students.

The program engages minority colleges to broaden participation and enhance recruitment. The REU will address STEM problems associated with sensor applications in internet of things, health monitoring and security. During the same period, projects will train REU students to interpret data from sensors by studying and programming machine learning algorithms, sensor fusion methods, and techniques to interpret big data sets.

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PI INTRODUCTION SLIDES

Nalini Venkatasubramanian

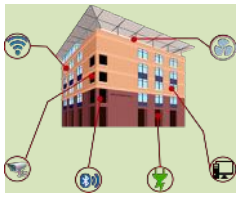
REU Site: IOT-SITY

Cultivating the IOT-Enabled Smart Community

University of California, Irvine
https://sites.uci.edu/iotsity
Irvine, CA
nalini@ics.uci.edu

Research Areas:

Safe Awareness and Alerting
Smart Communities



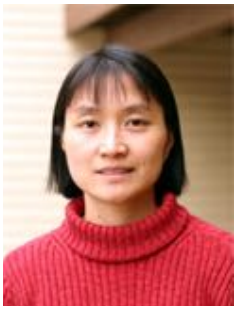
Privacy Preserving
Smart Spaces

Resilient
Smart Infrastructures

Site active since: 2017

Unique Features of the Site: Interns work in teams of 2, 1-week boot camp introducing IOT and research protocols, emphasis on outreach to underrepresented minorities.

CISE REU New PI Meeting, Arlington, March 2017



Bing Wang

Trustable Embedded Systems Security Research

University of Connecticut
ccc.engr.uconn.edu/reu
Storrs, CT
bing@uconn.edu

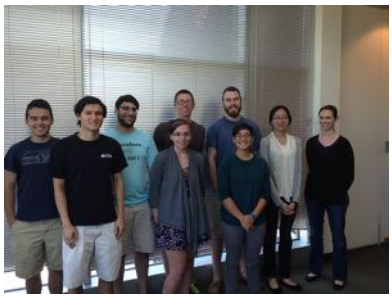
Research Areas: Hardware security, trustable computing, Secure Processor Architectures, Secure Voting Systems, Secure Mobile Computing/Networking

Unique Features of the Site:
-Ten students, ten faculty, CSE and ECE departments.

-Features trip to security conference.

-Weekly research seminars.

-Workshops on graduate school and career development coordinated with other School of Engineering REUs.



CISE REU New PI Meeting, Arlington, March 2017

PI INTRODUCTION SLIDES

Chunsheng Xin

Cybersecurity Research in a Multidisciplinary Environment

Old Dominion University
www.odureu.org
Norfolk, VA
cxin@odu.edu

Research Areas: Risk management, privacy, malware analysis, human behavior, intrusion detection, network security, cybersecurity ethics, cybersecurity applications.

Site active since: New site to start from summer 2017

Unique Features of the Site:
- Multidisciplinary research projects across computer science/engineering, IT, criminal justice, and philosophy.
- Students are mentored by a multidisciplinary mentor committee

CISE REU New PI Meeting, Arlington, March 2017

Guowei Yang

Software Systems and Analysis

Texas State University
http://reussa.cs.txstate.edu
San Marcos, TX
gyang@txstate.edu

Research Areas: Analysis of software qualities such as reliability, performance, safety, and energy efficiency for software systems including mobile software, internet of things, green computing, big data, and parallel systems.

Site active since: 2011

Unique Features of the Site: Field trips to industrial laboratories including IBM, SWRI, and Emerson; entrepreneurship forum; a poster day with competition for the best poster and participation of the dean as well as industry advisory member.

CISE REU New PI Meeting, Arlington, March 2017

REU SITE ASPECTS

Stephen Gilbert, *Iowa State University*
Jamie Payton, *Temple University*

In this panel, we are quickly introduced to the main picture and important aspects of running and preparing for an REU Site.

A more detailed sample yearly to-do list can be found on the resources website:

Please circle or make notes on areas that you might have questions or concerns about.

JANUARY
– Set up your website with program dates and application procedure
– Advertise your site: recruitment visits and talks, emails, fliers, etc.
– Start working on project topics and mentors
– Register and submit information for PI meeting

FEBRUARY
– Revise applications received
– Make travel arrangements for PI meeting
– Finalize projects and select mentors
– Talk to mentors about program: dates, expectations, etc.
– Talk to program evaluator and set up data collection for evaluation

MARCH
– Close application and organize application information
– Send letters of acceptance/rejection
– Finalize student line up (obtain proof of citizenship or perm residency)
– Attend PI meeting
– Start planning site activities (speakers, visits, trips, workshops, fun, etc.)
– Coordinate activities with other REU programs on campus (welcome ceremony, join
– Finalize evaluation instruments (surveys, questionnaires, etc.)

REU SITE ASPECTS

APRIL

– Email students with general information (airport pick up, dress codes, payment schedule, dorm information, first day of work date, time and place, etc.)
– Make travel arrangements including pick up of students
– Make housing and meal arrangements
– Process student IDs
– Set up payment procedure and schedule
– Finalize site program

MAY

– Set up labs (computers, access, any other hardware/software, etc.)
– Set up email accounts
– Pick up students from airport and take them to the dorms
– Take students to buy stuff for the dorms (grocery, etc.)
– Tour of campus
– Meet their mentors
– Get first stipend
– Welcome ceremony and Intro session about the program (activities, program, expectations, etc.)

**** List of example activities: ****

* Talk about graduate school and how to find funding for it
* GRE workshop
* How to prepare a good fellowship application
* Visits to sites/places of interest and fun and group building activities
* Technical talks from invited faculty
* How to write a good research paper
* How to do and present a good poster

JUNE

– Research starts
– Weekly surveys for program evaluation and weekly meeting with students
– Second stipend
– Mid-program presentations
– Submission of draft of research paper or poster

REU SITE ASPECTS

JULY
– Weekly surveys for program evaluation
– Have weekly meetings with students
– Third stipend
– Rent car to take student to airport
– End of program presentations
– Submission of poster
– Submission of research paper
– Poster competition and closing ceremony
– Dorms check out
– Students return to their homes

AUGUST
– Send post-program survey for program evaluation
– Collect information for renewal (statistics, publications, etc.)
– Prepare material for NSF annual report
– Work on research papers

SEPTEMBER
– Send all program evaluation material to program evaluator
– Obtain evaluator annual report
– Finalize research papers and submit for publication

OCTOBER
– Prepare and submit NSF annual report

NOVEMBER
– Start working on website for next year

DECEMBER
– Determine dates for next year
– Start advertisement process

NSF ANNUAL REPORT TEMPLATE

NSF Project Reporting Format

This document has been developed to provide Principal Investigators (PIs), co-PIs, and research organizations with:

- a listing of the questions that will be asked in the new NSF project reporting format;
- assistance in planning for the submission of the report; and
- a tool to help PIs collaborate with other contributors in answering these questions, if needed.

The project reporting service on Research.gov and the associated help documentation provides more detailed instructions and contextual assistance.

Note: NSF project reports are not cumulative and should always be prepared for the specific project reporting period only.

All NSF project reports must now be submitted through Research.gov

PIs should NOT complete and upload this document to Research.gov in order to meet your reporting requirement. You are required to enter text in the text boxes available

NSF ANNUAL REPORT TEMPLATE

Research.gov

Accomplishments

You have the option of selecting "nothing to report" in this section.

What are the major goals of the project?

<<<Include the goals for your REU Site>>

What was accomplished under these goals (you must provide information for at least one of the 4 categories below)?

Major Activities:

<<<Describe activities here>>

Specific Objectives:

Significant Results:

<<<List results in terms of participants, recruitment goals, publications or presentations, graduate school participation, etc>>>

Key outcomes or other achievements:

<<<Discuss any other significant outcomes>>>

What opportunities for training and professional development has the project provided?

<<<Include information about professional development for the undergraduates and the graduate students who are serving as mentors here.>>

How have the results been disseminated to communities of interest?

<<<Include your site web page link here as well as any other dissemination efforts.>>>

What do you plan to do during the next reporting period to accomplish the goals?

NOTE: You may upload PDF files with images, tables, charts, or other graphics in support of the Accomplishments section. You may upload up to 4 PDF files with a maximum file size of 5 MB each.

PIs should NOT complete and upload this document to Research.gov in order to meet your reporting requirement. You are required to enter text in the text boxes available

NSF ANNUAL REPORT TEMPLATE

Products

You have the option of selecting "nothing to report" in this section. There are no limitations to the number of entries you submit and you can also pull information directly from Thomson Search when using the online tool on Research.gov.

Within the Products section, you can list any products resulting from your project during the specified reporting period, such as:

<<<Fill this section in with products that have resulted. Put stars by student authors.>>>

Journals:

Books:

Book Chapters:

Thesis/Dissertations:

Conference Papers and Presentations:

Other Publications:

Technologies or Techniques:

Patents:

Inventions:

Licenses:

Websites:

Other Products:

NOTE: You may upload PDF files with images, tables, charts, or other graphics in support of the Products section. You may upload up to 4 PDF files with a maximum file size of 5 MB each.

Participants

There are no limits on the number of participants you list for this section; however, you must list participants who have worked one person month or more for the project reporting period. You have the option of selecting "nothing to report" in this section. For Research Experience for Undergraduates (REU) sites and supplements, specific questions will be listed in this section. The online service will also ask for additional information on participants such as:

- What individuals have worked on the project?

Note: Please do not upload this document to Research.gov in order to meet your reporting requirement. You are required to enter text in the text boxes available online.

- What organizations have been involved as partners?
- Have other collaborators or contacts been involved?

<<<It is critical that you list each REU student as an Individual participant and included an email address for the student. This will trigger a request to the student to provide additional information>

What individuals have worked on the project?

Name	Most Senior Project Role	Nearest Person Month Worked

What other organizations have been involved as partners?

The online service will also ask you for additional information such as:

- Type of Partner Organization
- Name
- Location
- Partner's contribution to the project

Have other collaborators or contacts been involved? Yes No

Impacts

You have the option of selecting "nothing to report" in this section.

What is the impact on the development of the principal discipline(s) of the project?

<<<You should at least be able to say something about contribution to the research base of the area in which your students are working>>>

What is the impact on other disciplines?

What is the impact on the development of human resources?

Note: Please do not upload this document to Research.gov in order to meet your reporting requirement. You are required to enter text in the text boxes available online.

NSF ANNUAL REPORT TEMPLATE

<<<REU sites always do this, whether developing graduate students, future researchers, preparing students for computing careers. Be sure to fill in this section.>>>

What is the impact on physical resources that form infrastructure?

What is the impact on institutional resources that form infrastructure?

What is the impact on information resources that form infrastructure?

What is the impact on technology transfer?

What is the impact on society beyond science and technology?

Changes / Problems

If not previously reported in writing to the agency through other mechanisms, provide the following additional information or state, "Nothing to Report", if applicable.

Changes in approach and reason for change:

Actual or Anticipated problems or delays and actions or plans to resolve them:

Changes that have a significant impact on expenditures:

Significant changes in use or care of human subjects:

Significant changes in use or care of vertebrate animals:

Note: Please do not upload this document to Research.gov in order to meet your reporting requirement. You are required to enter text in the text boxes available online.

Significant changes in use or care of biohazards:

Special Requirements

This report section is only available when Special Requirements are specifically noted in the solicitation and approved by the Office of Management and Budget.

NOTE: You may upload PDF files in support of the Special Requirements section. You may upload PDF files with a maximum file size of 10 MB each. There is no limit to the number of files uploaded.

Note: Please do not upload this document to Research.gov in order to meet your reporting requirement. You are required to enter text in the text boxes available online.

NSF HIGHLIGHTS TEMPLATE & EXAMPLE

NSF Highlight
Research Experiences for Undergraduates

1. **Basic Info and NSF Award Number(s)**
   Your name, award number and program director

   Alex Stoytchev, 0851976 (PI Stephen Gilbert), Sven Koenig

2. **What is your Suggested Title for your highlight?**

   Undergraduate Research: Robot Learns to Swipe a Card through a Card Reader: a Complex Proprioceptive Task

3. **What is the outcome or accomplishment?**

   Undergraduates Veselin Georgiev, Ramy Sweidan, and Todd Wegter broke new ground in robot learning by creating a constraint detection algorithm for proprioceptive (touch-based) tasks. They used the algorithm to teach a robot to swipe a credit card in a card reader, a difficult task without a subtle sense of touch.

4. **What is the impact?**

   It's usually difficult for robots to learn new tasks without specific instructions. This constraint detection software enables robots to learn many touch-based tasks more easily, e.g. turning a key in a lock, opening doors, and other tasks that are critical for integration of robots into our daily life and work.

5. **What explanation/background does the lay reader need to understand the significance of this outcome?**

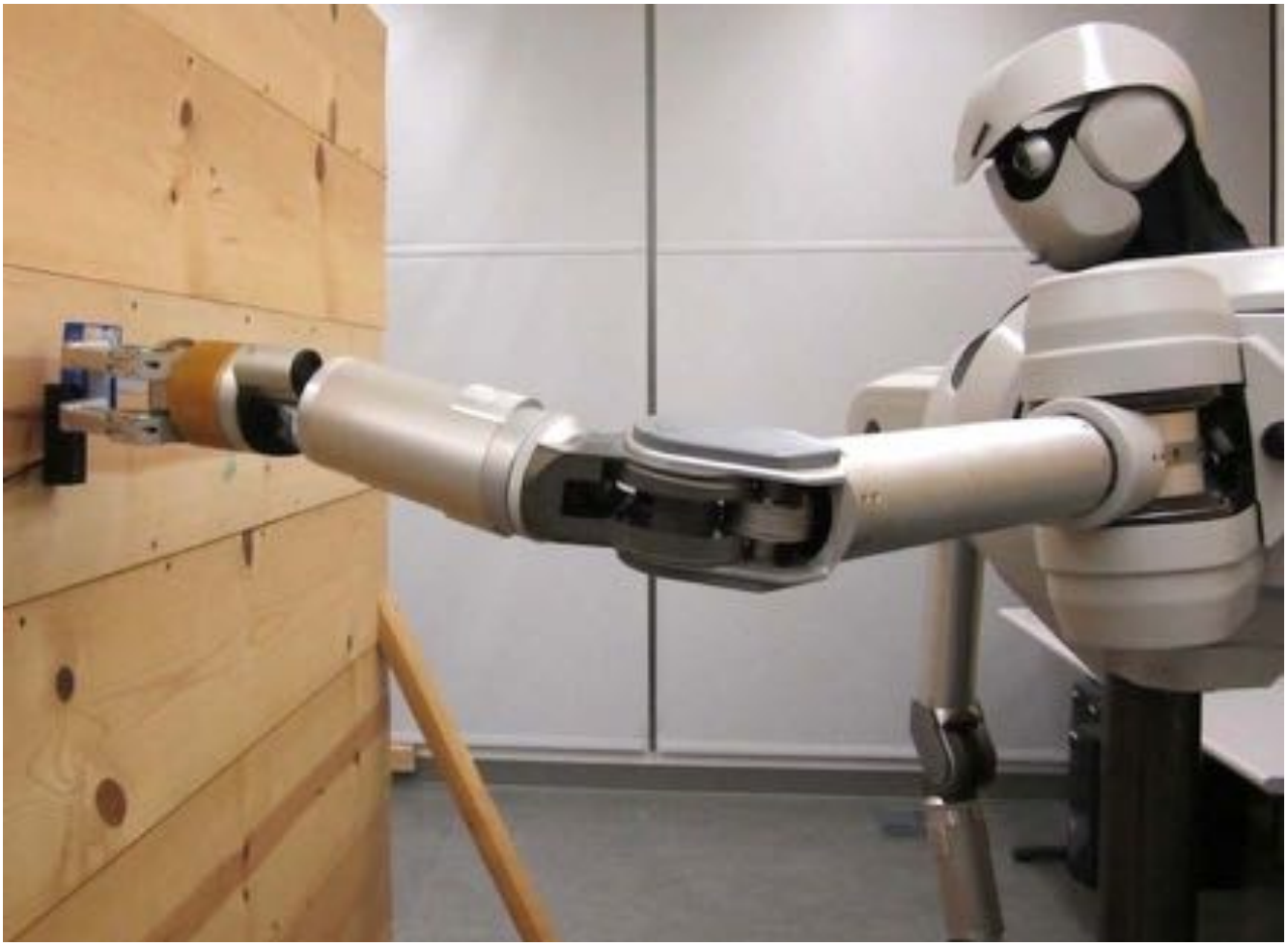
   Developmental robotics is a research field that treats robots like children, developing generic learning algorithms that enable robots to learn like a child learns, rather than teaching robots specific skills. While this approach may be more successful in the long run, it is difficult because many seemingly simple tasks for children involve careful fusion of multiple senses, e.g,, touch, sight, and hearing.

   Professor Alex Stoytchev and his students in Electrical and Computer Engineering at Iowa State University, have made impressive accomplishments in developmental robotics, teaching a robot to use sound, vision, and touch-based (proprioceptive) cues to differentiate objects, to sort containers from non-containers, to push buttons, and now with the help of three SPIRE-EIT undergraduates, to slide a card through a card reader, a difficult touch-based task.

   SPIRE-EIT is an intensive 10-week research program at Iowa State University particularly focused on increasing diversity in computer science and engineering with a focus on emerging interface technologies. Over 75% of participants have come from groups underrepresented in computing, including first-generation college students, women, and members of underrepresented ethnic or racial minorities.

NSF HIGHLIGHTS TEMPLATE & EXAMPLE

Image(s)/Caption(s)



The robot in Alex Stoytchev's lab uses a constrain detection algorithm developed by three undergraduate researchers to learn to swipe a credit card, a difficult task requiring a careful touch.

Video available at: http://www.youtube.com/watch?v=ahKiaTo9fVo
Other videos also available as well if this highlight is chosen.

Email address for owner of Image(s)

Stephen Gilbert, gilbert@iastate.edu

NSF HIGHLIGHTS TEMPLATE & EXAMPLE

NSF Highlight Template
Research Experiences for Undergraduates
PLEASE RESPOND BY January 5, 2012

Please provide the information requested below. Suggested word limits are provided as guidance, but feel free to exceed the word limits SLIGHTLY in the interest of time, or to provide adequate background to NSF. Feel free to use this template or to provide equivalent information in the body of an e-mail. Be sure to include at least one image.

1. **Basic Info and NSF Award Number(s)**
   Your name, award number and program director

   PI: Jamie Payton, NSF Award Number: 1156822, Program Officer: Maria Zemankova

2. **What is your Suggested Title for your highlight?**

   Sketch Search: Evaluating Sketch-Based Interfaces for Human Action Recognition

3. **What is the outcome or accomplishment?**

   Cecilia Mauceri's project provides a more intuitive way for users to search for videos that contain a particular human action. Cecilia and her research team, advised by Dr. Richard Souvenir, developed and evaluated a system that provides three new sketch-based search interfaces: (1) a *freehand* sketch with motion cues (e.g., arrows), (2) an articulating human stick figure (*puppet*) with motion cues, and (3) a *keyframe* sequence of puppets, similar to a filmstrip. The system interprets the sketch, animates it, and compares the generated video to a database of existing videos.

4. **What is the impact?**

   Searching videos for particular human actions could be used to improve athletic performance or to support security and surveillance activities. Most search engines use a text-based search query; resolving such queries requires videos to be tagged with metadata, which may be incomplete or incorrect. Sketch-based search requires no metadata, and the study performed here suggests that sketching can be a fast, accurate, and intuitive approach to content-based video retrieval.

5. **What explanation/background does the lay reader need to understand the significance of this outcome?**

   Search for human actions in video is an open, challenging problem. Commercial solutions (e.g., Google Video) typically employ search methods which do not operate on the content of the video; instead, a text query is matched to metadata of the video such as the title, description, or user comments. The possibility of incomplete or incorrect metadata is a well-known limitation to this approach, and these methods often fail when the query is ambiguous (e.g., "driving" for cars versus swinging a golf club). This has led to interest in content-based video retrieval (CBVR) methods that use an example video as a search query, matching features of the example video against those in the database and returning high-scoring matches. However, finding representative videos to use for querying other videos can be difficult. More specifically, if a video strongly matching a search concept were easily obtainable, it might not be necessary to perform the query in

the first place. This motivates the need for a new kind of query specification method to search for human actions in video.

A key challenge in sketch-based search of video is matching the sketch to the video. For this problem, it is important to model the content of the video rather than the appearance, since sketches do not share appearance characteristics with real video. To do so, Dr. Richard Souvenir and his team of students in the Future Computing Lab at UNC Charlotte have created a new kind of motion descriptor that can be applied to match videos to sketches, even if the position of the human in the video does not exactly align with that of the sketch. The three new sketch-based interfaces have been integrated with this new method of searching for human actions in video, and have been evaluated through a user study that measured accuracy and speed of users' construction of sketch-based search queries and asked the users to comment on ease of use.

Cecilia's contribution to this sketch-based search project was accomplished during a 9-week period as part of a Research Experiences for Undergraduates (REU) program, funded by the National Science Foundation. Cecilia joined nine other REU students in the College of Computing and Informatics at the University of North Carolina at Charlotte in the summer to explore research in human-centered technologies that aim to solve socially relevant problems. The REU program at UNC Charlotte has a history of broadening participation of underrepresented groups in computing and excellent student outcomes, resulting in over 30 student-authored research publications and seven students going on to win prestigious national fellowships for graduate study.

Image(s)/Caption(s)

REU SITE LOGISTICS AND RECRUITMENT

Stephen Gilbert, *Iowa State University*
Jamie Payton, *Temple University*

In this Panel, we deal with the details of running a site: soliciting applicants, selecting recruits, pre-arrival plans, post-arrival plans, housing, feeding, stipend payment schedules.

The panel will address a mixture of the identified concerns and the following topics:

- Soliciting and selecting participants.
  Satisfaction level with how recruitment proceeds at your site

- Setting the REU website and dealing with social media

- The steps that occur before and during the first month students arrive at your site.

- Handling housing, feeding, and social events at your site.

- Stipend payment.
  How are funds for meals supplied so that students have funds for meals, even if stipends are paid at the end of the month?
  How is housing for local versus non-local students paid and handled?
  How do students arrange for local bank accounts or access to funds while on campus?
  How is travel reimbursed?

- Documentation
  Proof of citizenship, releases for photos and video, transcripts and eligibility as undergraduate students, collecting emergency
  contact info and health insurance info.

- Conveying expectations

- Photo release forms, health insurance, and emergency contacts

MEET YOUR PROGRAM DIRECTOR

PROGRAM OFFICER	PI
Harriet Taylor	Perez, Alfredo
	Calyam, Prasad
	Hallstrom, Jason
	Xin, Chunsheng
	Namboodiri, Vinod
	Leiss, Ernst L.
	Venkatasubramanian, Nalini
Bill Bainbridge	Rodríguez, Fernando J.
	Grimm, Cindy
	O'Kane, Jason
	Ayanian, Nora
Sushil Prasad	Merz, Kenneth
	Katz, Daniel
	Baskiyar, Sanjeev
	Archer, Camille
Rahul Shah	Spanias, Andreas
	Rosenberg, Burton
	Mohler, George
	Yang, Guowei
	Wang, Bing
	Izurieta, Clemente
Wendy Nilsen	Xu, Songhua
	Duan, Lian
	Kautz, Henry
	Chan-Tin, David
	Dilkina, Bistra

KEYNOTE SPEAKER

Dr. Erwin P. Gianchandani

Deputy Assistant Director for CISE
National Science Foundation

Dr. Erwin Gianchandani is the Deputy Assistant Director for the Directorate for Computer and Information Science and Engineering (CISE) at the National Science Foundation (NSF), where he contributes to all aspects of the directorate's management, including strategic and human capital planning, formulation and implementation of the directorate's more than $900 million annual budget, and oversight of day-to-day operations.

Previously, Dr. Gianchandani served as the deputy division director for the CISE Division of Computer and Network Systems (CNS). Before joining NSF in 2012, he was the inaugural director of the Computing Community Consortium (CCC), providing leadership to the computing research community in identifying and pursuing audacious, high-impact research directions; and director of innovation networking at the University of Virginia, reporting to the university's vice president for research.

Dr. Gianchandani has published extensively and presented at numerous international conferences on the subject of computational systems modeling of cellular reaction networks, with the goal of better understanding disease mechanisms and identifying therapeutic targets. Dr. Gianchandani received his Ph.D. in biomedical engineering, M.S. in biomedical engineering, and B.S. in computer science, all from the University of Virginia.

REU PI SITE EVALUATION

Audrey Rorrer, *University of North Carolina at Charlotte*

For this panel, we are going to present the CISE REU Evaluation Toolkit, how to use it and its outcomes.

The main website can be found here: *http://reu.uncc.edu/cise-reu-toolkit*

The panel will discuss the following:

- Birds Eye View of Toolkit Components
  Common application, shared applicant pool, a la carte survey, faculty survey

- Example outcomes for site reports

- Data collection for generation renewal and reports

- Measures for evaluating your REU site

RESEARCH & MENTORING

Stephen Gilbert, *Iowa State University*
Jamie Payton, *Temple University*

In this Panel, we deal with the details of providing effective research understanding, expectations, and mentoring best practices:

The panel will address a mixture of the identified concerns from the previous activity and the following topics:

- Coordinating day-to-day research activities.
  -Do you involve multiple faculty, graduate students, post docs as mentors for your REU participants?

- Depth and level of research expected from participants
  Is the research at the level of first year graduate students?
  Which may ultimately be published in top venues in the field?

- Preparing the students for the research in addition to introducing the research topics
  How do you teach the REUs how to write a good paper?
  or what a research project is?
  What is a literature review?

- How students might build a paper through a number of steps
  Are there possible templates for student publications?

- Who is involved in guiding the REU students?
  Grad students, faculty, both?
  How do we set expectations for the mentors to meet?

- Best practices for good mentoring
  How are the mentors' participation and mentoring assessed during the program?

- Collaborating with the students beyond the summer

PROFESSIONALISM & DISSEMATION

Stephen Gilbert, *Iowa State University*
Jamie Payton, *Temple University*

In this Panel, we deal with the details of professional practices and research ethics for undergraduates.

The panel will address a mixture of the identified concerns from the previous activity and the following topics:

- Good team building skills
  - Being an effective team member

- Time management

- Communication (written and oral) skills
  - Presenting the research live

- Research integrity
  - Plagiarism

- Ethical conduct of research

- Non-research activities
  - Extracurriculars
  - Field Trips

- Prepping for grad school
  - GRE prep

- Making posters

- How Graduate Felloships work

IMPORTANT WEBSITES

REU PI Meeting website:
http://projects.vrac.iastate.edu/cise-reu-workshop/
In this website you can find the following:
- 2017's Meeting Agenda
- Hotel and Transportation details
- PDF Presentation Slides and this Booklet

REU PI Site evluation:
http://reu.uncc.edu/cise-reu-toolkit
In this website you can find the following:
- Audrey's Evaluation Toolkit

CISE REU PI Resources website:
http://www.cisereu.org/
In this website you can find the following:
- PI resources
- REU Student contracts
- REU Student code of conduct
- REU Student housing agreements and logistics

CISE REU Sites seeking more applicants listing:
http://bit.ly/reu2017seekingapps
In this link you can find the following:
- REU sites still actively seeking applicants

Active CISE REU Site listing:
http://www.nsf.gov/crssprgm/reu/list_result.cfm?unitid=5049
In this website you can find the following:
- A list of active CISE REU sites as of 2017
- REU Sites contact information and research description
- You can also add your REU site to this list

ACTIVE REU SITES 2017

CISE REU Sites
2017 Locations

Award#		Institution	PI	Email	Location	Funding Year	Ending Year	PD
1659845	1	Auburn	Baskiyar, Sanjeev	baskisa@auburn.edu	Alabama	2017	2019	SP
1540326	2	Auburn	Biaz, Saad	sbiaz@eng.auburn.edu	Alabama	2015	2017	HT
1659871	3	Arizona State	Spanias, Andreas	spanias@asu.edu	Arizona	2017	2019	RS
1659428	4	U. Arizona	Sprinkle, Jonathan	sprinkle@ece.arizona.edu	Arizona	2017	2019	HT
1659805	5	Harvey Mudd	Dodds, Zachary	dodds@cs.hmc.edu	California	2017	2019	HT
1560162	6	U Cal San Diego	Kastner, Ryan	kastner@ucsd.edu	California	2016	2018	HT
1659833	7	U. Cal - Berkeley	Demmel, James	culler@cs.berkeley.edu	California	2017	2019	RS
1659887	8	U. Cal Irvine	Venkatasubramanian, Nalini	nalini@ics.uci.edu	California	2017	2019	HT
1560483	9	UCLA	Pottie, Gregory	pottie@ee.ucla.edu	California	2016	2018	WN
1659838	10	USC	Ayanian, Nora	ayanian@usc.edu	California	2017	2019	BB
1659880	11	USC	Jordan, Thomas	tjordan@usc.edu	California	2017	2019	SP
1560426	12	USC	Suma, Evan	suma@ict.usc.edu	California	2016	2018	BB
1659788	13	U. Colorado/Col. Springs	Kalita, Jugal	kalita@eas.uccs.edu	Colorado	2017	2019	WN
1659764	14	U. Connecticut	Wang, Bing	bing@uconn.edu	Connecticut	2017	2019	RS
1659484	15	Florida Atlantic	Hallstrom, Jason	jhallstrom@fau.edu	Florida	2017	2019	HT
1560345	16	Florida Institute of Tech	Anagnostopoulos, Georgios	georgio@fit.edu	Florida	2016	2018	RS
1461119	17	Florida International U	Akkaya, Kemal	kakkaya@fiu.edu	Florida	2015	2017	HT
1560134	18	Florida International U	Pissinou, Niki	pissinou@fiu.edu	Florida	2016	2018	MM
1461121	19	U. Central Florida	Shah, Mubarak	shah@cs.ucf.edu	Florida	2015	2017	BB
1560302	20	U. Central Florida	Turgut, Damla	turgut@eecs.ucf.edu	Florida	2016	2018	HT
1560243	21	U. Florida	Boyer, Kristy	keboyer@cise.ufl.edu	Florida	2016	2018	BB
1659144	22	U. Miami	Rosenberg, Burton	burt@cs.miami.edu	Florida	2017	2019	RS
1645025	23	U. South Florida	Labrador, Miguel	mlabrador@usf.edu	Florida	2017	2019	HT

CISE REU Sites
2017 Locations

1560214	24	Columbus State	Perez, Alfredo	perez_alfredo@columbusstate.edu	Georgia	2016	2018	HT
1659757	25	Georgia Tech	Dilkina, Bistra	bdilkina@cc.gatech.edu	Georgia	2017	2019	WN
1461133	26	Boise State	Xu, Dianxiang	dianxiangxu@boisestate.edu	Idaho	2015	2017	RS
1659836	27	DePaul	Raicu, Daniela	draicu@cti.depaul.edu	Illinois	2017	2019	WN
1461260	28	IIT	Raicu, Ioan	iraicu@cs.iit.edu	Illinois	2015	2017	RS
1659702	29	U. Illinois	Katz, Daniel	dskatz@illinois.edu	Illinois	2017	2019	BB
1560276	30	Indiana U	Siek, Katie	ksiek@indiana.edu	Indiana	2016	2018	WN
1659488	31	Indiana U.	Mohler, George	georgemohler@gmail.com	Indiana	2017	2019	RS
1560020	32	IUPUI	Li, Feng	fengli@iupui.edu	Indiana	2016	2018	HT
1560363	33	Notre Dame	Thain, Douglas	dthain@nd.edu	Indiana	2016	2018	WN
1461296	34	Purdue Calumet	Yang, Shuhui	yang246@purdue.edu	Indiana	2015	2017	HT
1461160	35	Iowa State	Gilbert, Stephen	gilbert@iastate.edu	Iowa	2015	2017	BB
1569396	36	Wichita State	Namboodiri, Vinod	vinod.namboodiri@wichita.edu	Kansas	2017	2019	HT
1560410	37	Louisiana State	Moreno, Juana	moreno@lsu.edu	Louisiana	2016	2018	SP
1460900	38	Salisbury University	Lu, Enyue	ealu@salisbury.edu	Maryland	2015	2017	RS
1560193	39	U. of Maryland	Gasarch, William	gasarch@cs.umd.edu	Maryland	2016	2018	RS
1461060	40	Mass Lowell	Fu,Xinwen	xinwenfu@cs.uml.edu	Massachusetts	2015	2017	HT
1559894	41	Northeastern U	Kaeli, David	d.kaeli@neu.edu	Massachusetts	2016	2018	SP
1461021	42	U. Mass Amherst	Jensen, David	jensen@cs.umass.edu	Massachusetts	2015	2017	RS
1560229	43	Worcester Polytechnic	Rundensteiner, Elke	rundenst@cs.wpi.edu	Massachusetts	2016	2018	WN
1560169	44	Michigan State	Merz, Kenneth	merzjrk@msu.edu	Michigan	2016	2018	PS
1460897	45	Oakland University	Fu, Huirong	fu@oakland.edu	Minnesota	2015	2017	HT

CISE REU Sites
2017 Locations

1460620	46	U. Minnesota	Boley, Daniel	boley@cs.umn.edu	Minnesota	2015	2017	BB
1460697	47	Missouri S&T	Madria, Sanjay	madrias@mst.edu	Missouri	2015	2017	HT
1659134	48	U. Missouri - Columbia	Calyam, Prasad	calyamp@missouri.edu	Missouri	2017	2019	HT
1560191	49	Washington Univ.	Das, Sanmay	sanmay@wustl.edu	Missouri	2016	2018	WN
1658971	50	Montana State	Izurieta, Clemente	clemente.izurieta@montana.edu	Montana	2017	2019	RS
1659472	51	NJIT	Xu, Songhua	songhua.xu@njit.edu	New Jersey	2017	2019	WN
1559855	52	Rutgers	Wright, Rebecca	rebecca.wright@rutgers.edu	New Jersey	2016	2018	RS
1559723	53	New Mexico State	Cao, Huiping	hcao@cs.nmsu.edu	New Mexico	2016	2018	SP
1359266	54	CUNY Col of Staten Island	Petingi, Louis	louis.petingi@csi.cuny.edu	New York	2014	2017	SP
1659513	55	Hofstra	Duan, Lian	lian.duan@hofstra.edu	New York	2017	2019	WN
1559652	56	New York Inst. of Tech	Dong, Ziqian	ziqian.dong@nyit.edu	New York	2016	2018	HT
1559889	57	RIT	Alm, Cecelia	coagla@rit.edu	New York	2016	2018	BB
1460894	58	RIT	Kushainaga, Raja	rskics@rit.edu	New York	2015	2017	BB
1659250	59	U. Rochester	Kautz, Henry	kautz@cs.rochester.edu	New York	2017	2019	WN
1560037	60	East Carolina U	Ding, Junhua	dingj@ecu.edu	North Carolina	2016	2018	RS
1560385	61	North Carolina A&T	Ram, Bala	ram@ncat.edu	North Carolina	2016	2018	SP
1460864	62	North Carolina A&T	Roy, Kaushik	kroy@ncat.edu	North Carolina	2015	2017	HT
1659745	63	North Carolina State	Barnes, Tiffany	tiffany.barnes@gmail.com	North Carolina	2017	2019	BB
1559593	64	North Carolina State U	Parnin, Christopher	cjparnin@ncsu.edu	North Carolina	2016	2018	RS
1461166	65	UNC Charlotte	Payton, Jamie	payton@uncc.edu	North Carolina	2015	2017	BB

CISE REU Sites
2017 Locations

1359244	66	Univ. North Dakota	Marsh, Ronald	rmarsh@cs.und.edu	North Dakota	2014	2017	SP
1560315	67	Wright State U	Zhang, Junjie	junjie.zhang@wright.edu	Ohio	2016	2018	HT
1659645	68	Oklahoma State	Chan-Tin, David	chantin@cs.okstate.edu	Oklahoma	2017	2019	WN
1659746	69	Oregon State	Grimm, Cindy	grimmc@onid.orst.edu	Oregon	2017	2019	BB
1559933	70	Oregon State	Tullos, Desiree	desiree.tullos@oregonstate.edu	Oregon	2016	2018	SP
1659774	71	Carnegie-Mellon	Dolan, John	jms@cs.cmu.edu	Pennsylvania	2017	2019	BB
1560137	72	Carnegie-Mellon	Sunshine, Joshua	josh.sunshine@cs.cmu.edu	Pennsylvania	2016	2018	BB
1406971	73	Temple	Wu, Jie	jiewu@temple.edu	Pennsylvania	2015	2017	HT
1659514	74	U. South Columbia	O'Kane, Jason	jokane@cse.sc.edu	South Carolina	2017	2019	BB
1559978	75	South Dakota State	Gent, Stephen	stephen.gent@sdstate.edu	South Dakota	2016	2018	SP
1560434	76	Tennessee Tech	Mahmoud, Mohamed	mmahmoud@tntech.edu	Tennessee	2016	2018	HT
1659502	77	U. Tennessee	Wong, Kwai	kwong@utk.edu	Tennessee	2017	2019	SP
1659807	78	Texas State - San Marcos	Yang, Guowei	gyang@txstate.edu	Texas	2017	2019	HT
1659755	79	U. Houston	Huang, Stephen	shuang@cs.uh.edu	Texas	2017	2019	WN
1461065	80	U. North Texas	Bryce, Renee	Renee.Bryce@unt.edu	Texas	2015	2017	RS
1559997	81	U. Texas Austin	Vishwanath, Sriram	sriram@ece.utexas.edu	Texas	2016	2018	HT
1461149	82	U. Texas Dallas	Wong, Weichen E.	ewong@utdallas.edu	Texas	2015	2017	RS
1659795	83	Old Dominion	Xin, Chunsheng	cxin@odu.edu	Virginia	2017	2019	HT
1460917	84	Washington State	Holder, Larry	holder@wsu.edu	Washington	2015	2017	BB
1560219	85	U. Wisconsin-Stout	Shi, Wei	shiw@uwstout.edu	Wisconsin	2016	2018	WN

HOTEL MAP

WESTIN
HOTELS & RESORTS

The Westin Arlington Gateway

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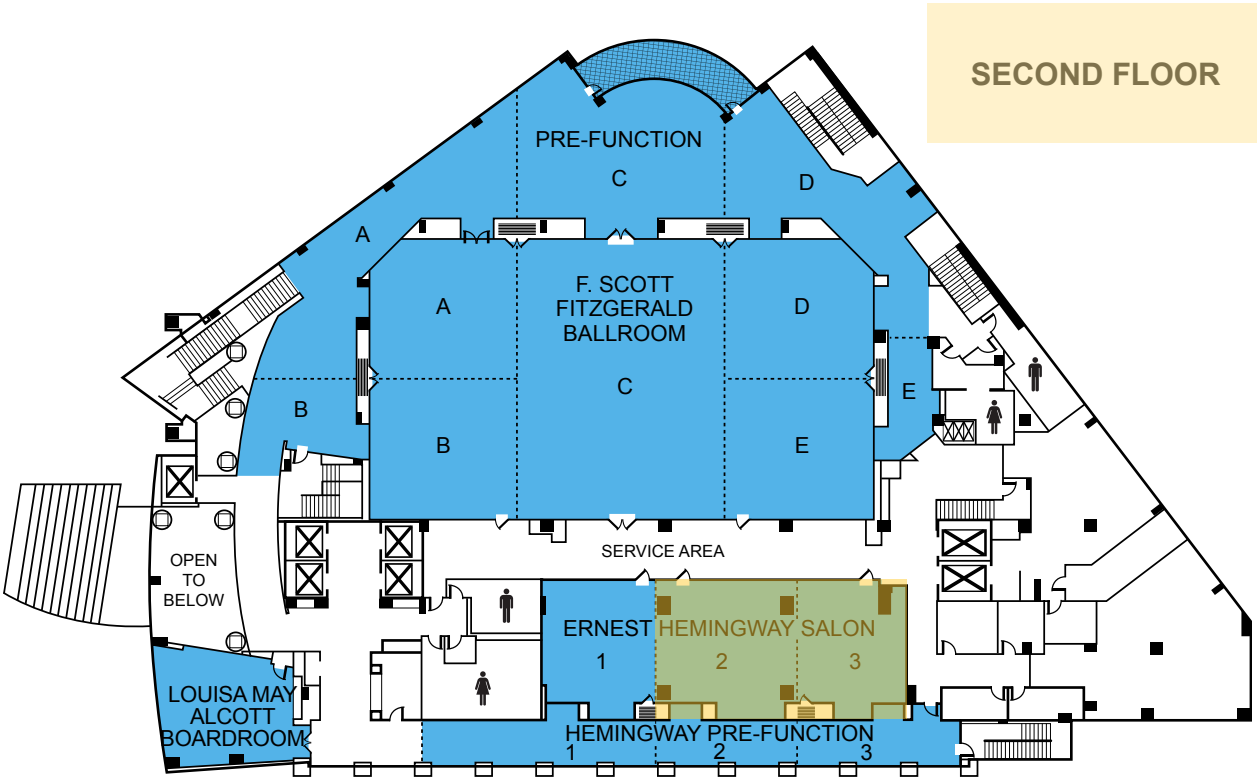
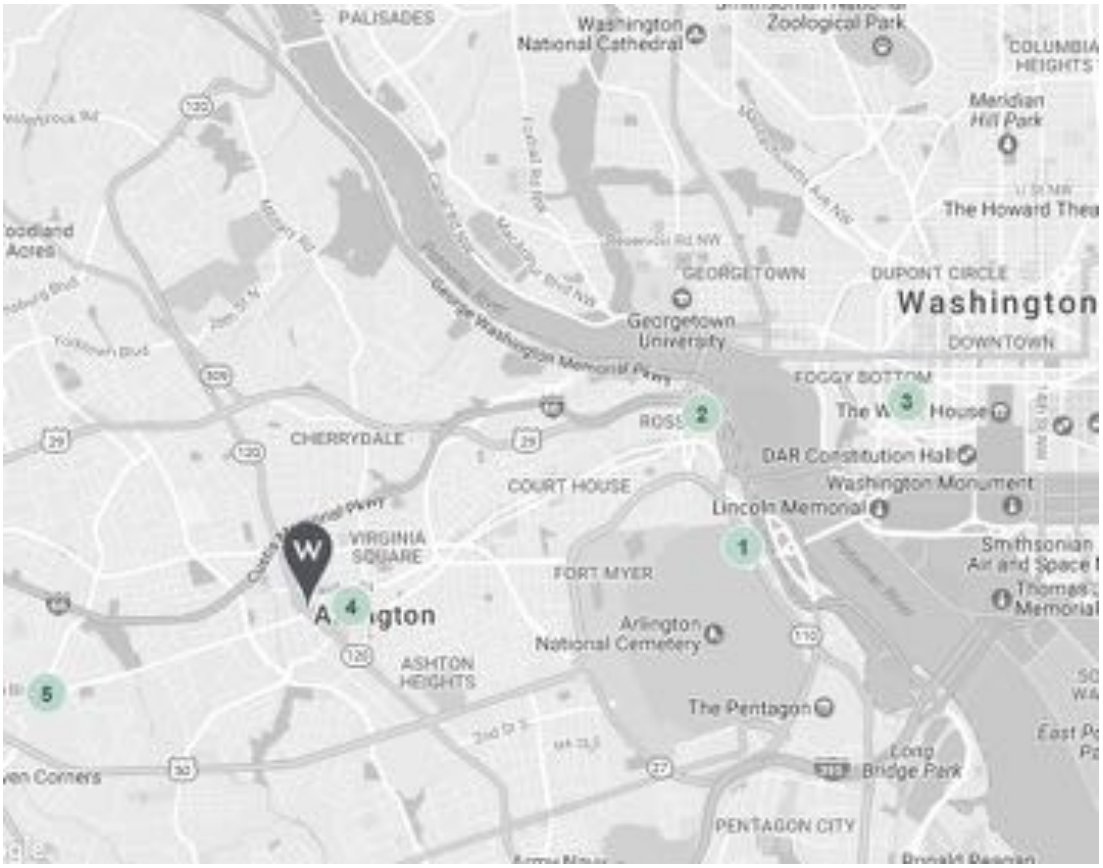
Phone (703) 717-6200 • Fax (703) 717-6204



ARLINGTON AREA MAP



1. Arlington National Cementary

2. Artisphere

3. East Potomac Park

4. Kettler Capitals Iceplex

5. Upton Hill Regional Park