Panel 1
Transferring lessons learned from virtual to in-person REU sites

CISE REU PI Meeting 2023, Austin, Texas – April 2023

Thursday, April 20, 2023
2:30-3:30 PM in Primrose AB
Description of the panel

The pandemic has challenged the REU site programs at all levels in new ways but has also taught us tremendous lessons that can be leveraged to improve our REU sites as we move forward back into the in-person REU sites. This panel will explore lessons learned from virtual to in-person REU sites. The panelists, all of whom hosted virtual sites during the pandemic, will share their experiences moving from a virtual to an in-person site, highlight challenges they faced and novel approaches they took to overcome these challenges, and describe some of the methods that benefit their in-person REU site from the virtual site experience.
Panelists

Ioan Raicu
Illinois Institute of Technology

Prasad Calyam
University of Missouri

Ron Artstein
University of Southern California

Anne Bowen
The University of Texas at Austin

Feng Li
Indiana University–Purdue University Indianapolis
Ioan Raicu

BigDataX: From theory to practice in Big Data computing at eXtreme scales

Illinois Institute of Technology
Blessings & Challenges of A Virtual REU Site

● Sample size 54 students (44 in-person and 10 virtual)

● The Good
  ○ Eliminated the hardest part of the in-person REU logistics, housing!
  ○ Increased potential eligible student applications
  ○ Significantly reduced disruptive social dynamics between students

● The Bad
  ○ Difficult to motivate students to work full time
  ○ Access to expert help is slower
  ○ Brainstorming as a group in front of a whiteboard is not ideal in Zoom
  ○ Inadequate computers to participate in research => purchase new
  ○ Social activities were less attended and less engaging
  ○ Research productivity published was lower compared to other summers
  ○ Sub-par cohort experience
  ○ On average, reduced student politeness
Changes Made to In-Person Program

- Lesson Learned: students overwhelmingly want to be in-person

  - However, we will make more use of virtual tools like Zoom
    - We hope to have more engagement beyond the official mentors such as postdocs or PhD students through Zoom
    - We plan to have students participate in more lecture series events at IIT, UChicago, and Argonne through virtual seminars
    - Some social activities can be done effectively online; chess tournament was quite successful last year
    - Having students participate in workshops or conferences remotely might be a good cost-effective option for some students in the program who did not get far enough in their projects to publish
Prasad Calyam

Research in Consumer Networking Technologies

University of Missouri
Activity Challenges and Strategies in Virtual REU Program

- **Peer interactions**
  - "Distance can make learning and collaboration harder…";
  - "Staying focused is tough",
  - "Zoom was crashing and unreliable sometimes"
  - Technology (i.e., Zoom - with Video ON, Slack, OneDrive), Literature review discussions

- **Computer Equipment**
  - Used more cloud computing resources (e.g., AWS, GCP, GENI, CloudLab, Chameleon)

- **Talks and Tours**
  - Virtual visit to middle school, Virtual Industry visit (e.g., IQT Labs), Virtual Data Center Tour

- **Student Motivation and Mingling**
  - Virtual sign-in/sign-out every day, Friday afternoon casual chat / virtual games after mid-term feedback (e.g., Pictionary, Word Puzzle and Sudoku), Weekly student report analysis

- **Student Research Exhibition**
  - Virtual poster session by Campus OUR, virtual conference presentations

*Big challenge was to ensure the "Quality of the Program" is maintained at a high level*
Lessons Learnt for In-Person REU Program Offering

● Continue using more technology tools
  ○ Cloud computing platforms (for diverse hardware resources to setup testbeds and perform experiments), collaboration tools - everyone is more comfortable with these in the post-COVID world

● Flexibility with hybrid work
  ○ Not requiring paper sign-in/sign-out, More virtual expert talks from industry, government

● Peer interactions
  ○ Continue occasional Friday afternoon game time or casual chat related to e.g., graduate school, career in academia vs. industry
Ron Artstein

The Face and Mind of Artificial Intelligence

University of Southern California
Challenges and solutions for a remote site

Equipment, network access
- Ship equipment to students when needed
- Shift to public datasets that don’t require secure access

Communication
- More intentional meetings
- Shared video seminars
- Shift from lecture to joint activity

Program cohesion
- Social coordinator role
Challenges in returning to an in-person site

The environment has changed
- Fewer people in the building (including mentors)

Student habits have changed
- Want to work remotely
- Want more free time
- Less patience for organized activities

But there is a desire to get together
- Cross-site poster symposium very popular
Anne Bowen

Research Experience For Undergraduates
Cyberinfrastructure (Ci) Research 4 Social Change

The University of Texas at Austin
Engagement Strategies

- Pre-assessment and 1:1s before the start of the REU
- Daily Zoom check-in (less frequently over time)
- Virtual team-building activities and games (breaks)
- Slack for on-demand needs
- DataCamp for supplemental training (self-paced)
- Collaboration with other REU Sites
  - Guest speakers from diverse backgrounds
  - Poster Symposium
Lessons

- Pre-assessment and 1:1s before the start of the REU facilitate matching of students with mentors
- Be flexible, but set parameters
- Structure/shared space for weekly check-in and team-building activities
- Awareness and access to university mental health resources - normalize by discussing during orientation
- Self-pace and on-demand training: DataCamp, peer mentors, and TACC staff reached via Slack
- Faculty mentor + TACC mentor
- Weekly student reflections/journals allow for program changes/modifications as needed (reported anonymously to project team)
Feng Li

Enhancing Undergraduate Experiences in Mobile Cloud and Data Security

Indiana University–Purdue University Indianapolis,
Engagement activities

- Pre-site introduction and travel arrangement discussion before the start of the REU
- Virtual team-building activities and cybersecurity games
- Collaboration with other REU Sites
  - Guest speakers from diverse backgrounds
  - Poster Symposium
- Discord for on-demand needs
- Notion.so collaborative notes and project planning documents
- Virtual collaborative Capture of the Flag (CTF) for high school camps
- Student self-organized workshop, parents and friends virtual participation
Lessons Learnt for In-Person REU Program Offering

- **Technology tools make collaborations easier:**
  - Virtual Machine farms, cloud computing platforms, notion.so, Discord, collaboration tools - technology tools create more collaboration opportunities before- in- and after-REU site program in the post-COVID world

- **Flexibility with seminars and talks**
  - More virtual expert talks from academia, industry, government
  - Three invited talks during the REU site time in 2022

- **Peer interactions**
  - Continue occasional Friday evening game time
  - Two REU research pairs continued their collaboration and wrote papers in Fall 2022
What role did technology play in your virtual REU program, and how have you incorporated technology into your in-person program to enhance the learning experience? Were there any specific technologies that worked well for your site?
What advice/resources/tools would you give to/share with someone who is interested in incorporating hybrid experiences to the REU student participants?
PIs’ Q&A with panelists:
REU Student Travel Grant

https://www.rmbl.org/students/reu-travel-grant/

**BIO, GEO, CISE and OCE REU Travel Grant**

**REU Travel Grant Program**

This portal is for applications for travel awards for undergraduates to present the results of their research experiences funded especially participants in NSF REU experiences involving bioscience (BIO), computer and information sciences, and engineering (CISE), Ocean Sciences (OCE), and Earth Sciences (EAR). Applicants should be presenting a poster or talk based on their research experience. Applicants that have conducted their research experience in 2021 or later will be given priority.

You will need to apply at least one month before you need to know about funding, and preferably at least two months. You may request up to $1200 with larger requests considered on a case-by-case basis. Once you start the application process you will be asked for the following info:

1. A budget (travel, registration, other costs)
2. The name and date of the conference
3. Whether you will be giving a talk or poster and an abstract of the talk or poster.
4. The institution (e.g., college, university, or research institution) where you conducted the research and the name and email of your mentor.
5. If you were funded through Research Experience for Undergraduates (REU) funding, either a site or a supplement, you will be asked the name of the program, as well as the name and email of the person running the program.
6. Information about you, including where you go to school, what year you will be, your major, what you are thinking about after college, and ethnic background.
7. A letter of recommendation from your mentor. The recommendation should be signed, in pdf format, and have a statement that you and your mentor have talked and that s/he/they agree that it is okay to present the...
2023 REUNS Workshop (9th)

https://sites.google.com/view/reuns-2022/home
Co-located with MobiHoc 2023

Important Dates
We follow the deadlines specified by the IEEE MASS Conference for workshop papers:

- Paper Submission Deadline: July 15, 2022 - July 31, 2022
- Notification of Acceptance: August 13, 2022
- Camera-ready Version: August 20, 2022

Camera-ready submission instructions

- https://sites.google.com/view/ieee-mass-2022/authors/final-paper-submission?authuser=0
- Note that the Poster prefix is not needed when submitting the camera-ready extended abstract.

Registration instructions

- https://sites.google.com/view/ieee-mass-2022/registration

Travel support: REU undergraduate participants in CISE REU Sites can now request funding from the REU Travel Grant program.