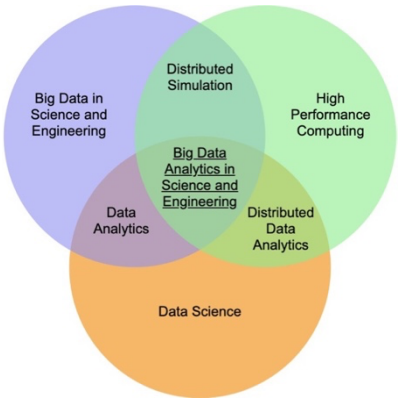
Research Experience for Undergraduates (REU) Summer 2023: Online Interdisciplinary Big Data Analytics in Science and Engineering

Information and apply by 03/01/2023 at https://BigDataREU.umbc.edu/

Introduction



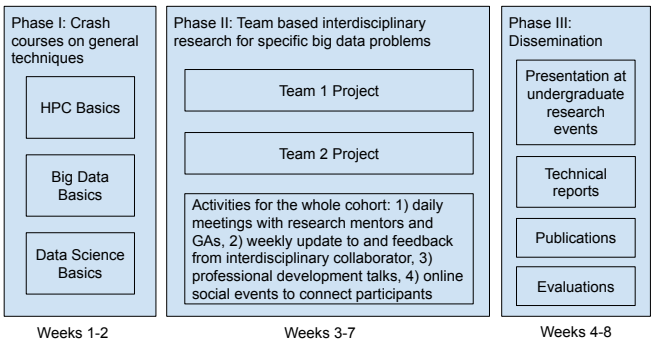
This Research Experience for Undergraduates (REU) Site program will provide **8-week** summer **online** research experiences to undergraduates on how to utilize modern data science and high-performance computing (HPC) techniques to process and analyze big data in many science and engineering disciplines such as Atmospheric Science, Mechanical Engineering, and Medicine. The REU Site program will be conducted purely online to allow students to conduct research without traveling and work with experts nationwide. In recent years, astronomical growth of available datasets in many science and engineering disciplines often requires big data analytics techniques to efficiently and effectively process the large datasets and gain knowledge from them. The program will help students identify frontier research challenges when facing big data in science and engineering, and guide students to conduct research to tackle the research challenges using advanced cyberinfrastructure software technologies (big data, distributed machine/deep learning, HPC, etc.) and hardware resources (including big data cluster, CPU cluster, and GPU cluster). The program will provide development of the national workforce in areas of critical need on "Data + Computing + X". **Each participant who successfully finishes the program and completes all requirements will receive $5,000 stipend and support to conference traveling to present his/her research.**

We will host at least eight undergraduate students each year in 2021, 2022, and 2023 (2 teams each year). In 2023, the eight-week REU program will be **06/05/2023-07/28/2023**. Application form can be found at https://forms.gle/n7WKDdfWbSNmMfjx5.

Who should participate

- Students in computing related disciplines, such as Computer Science, Data Science, Mathematics, and Statistics, who want to know how advanced computing techniques in their own disciplines can help grant challenges in science and engineering.
- Students in science and engineering disciplines, such as Atmospheric Science, Mechanical Engineering, and Medicine, who want to know how advanced computing techniques can help grant challenges in their own disciplines.
- Students interested in interdisciplinary research and how big data and HPC techniques can be applied to Computational Sciences.

Online training structure



Prerequirites/Eligibility

1. Still be an undergraduate student at an accredited institution in the fall semester following the program
2. Completed at least 15 college credits prior to the start of the program
3. Completed a minimum of one course in programming, one course in calculus, and one course in statistics (soft requirement)
4. GPA of at least 3.0 on a scale of 4.0 (soft requirement)
5. Be a citizen, national, or permanent resident of United States
6. Has access to a desktop/laptop computer
7. Be prepared to commit full-time to the program

Faculty mentors

- Dr. Jianwu Wang, Department of Information Systems
- Dr. Matthias Gobbert, Dept. of Mathematics and Statistics

Apply for the Summer 2023 training (06/05/2023-07/28/2023)

There is no fee to apply to the training program. **Each participant who successfully finishes the program and completes all requirements will receive $5,000 stipend.** We expect to have 8 participants in two multidisciplinary teams of four. Due to the capacity limit, there will be a selection process. To receive full consideration, please submit your application before **03/01/2023**.

The application package should include applicant's CV, personal statement, transcript, and at least two letters of recommendation. The personal statement needs to address specifically why the participant is interested in this program, the background in computing, programming and related knowledge, how participation will promote his/her career goals, and how he/she can contribute to a team of participants from each discipline.

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