A program funded by NASA MIRO (MUREP Institutional Research Opportunity)

http://bigdata.ucr.edu

Educating the next generation of researchers in big data analytics and visualization.

FELLOWSHIPS AND INTERNSHIPS IN EXTREMELY LARGE DATA SETS

(Fellowships and Internships in Extremely Large Data Sets)

A program funded by NASA MIRO

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Funded by the NASA MUREP Institutions Research Opportunity (MIRO) program and partnering with NASA’s Jet Propulsion Laboratory (JPL), the FIELDS program funds undergraduate and graduate students, especially underrepresented minorities, in data intensive research to meet NASA’s future workforce needs.

A specialization in Big Data analysis and visualizations within your STEM degree produces highly sought after research skills. Data Scientists and Engineers are in very high demand in today’s economy. Through this program you will acquire the necessary skills for data intensive jobs.

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FIELDS Program Overview

Participants in the FIELDS program are from science, technology, engineering and math (STEM) disciplines. They should be prepared to undergo computer science and statistics training and perform research in an area involving intense use of data. Opportunities are available for the participants to visit JPL or research labs at the University of California, Riverside (UCR). The FIELDS program includes:

Undergraduate Summer Internships at JPL
Students will be involved in research activities for 10 weeks under the supervision of science staff members. During this time, they will receive free room, board, and $2,000 in financial assistance.

Undergraduate Laboratory Internship at UCR
Students performing research in UCR labs during the academic year can receive up to $3,000.

Graduate Student Fellowships
Graduate Fellows receive up to two years support in fees, stipend, and $10,000 during the summer term. FIELDS Fellows are required to work in data intensive projects and collaborate with a JPL science staff member in addition to their academic advisor.

Master Course on Big Data at UCR
A one year, online Master Course will be developed at UCR to provide training in data science, visualization and its application in science and technology. After completing the course, students will conduct research in a project either at UCR or JPL for data related jobs in industry or academia.

Workshops
The FIELDS program organizes free workshops during the year to familiarize students with data science and visualization, providing them the necessary background to apply for such jobs.

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History of Digital Data

- 1950
- 1960
- 1970
- 1980
- 1990
- 2000
- 2010
- 2020
- 2030

XB, Xenottabytes
YB, Yottabytes
ZB, Zettabytes
EB, Exabytes
PB, Petabytes
TB, Terabytes
GB, Gigabytes
MB, Megabytes
KB, Kilobytes

M. Hilbert reports digital data surpasses analog data. He calls this the beginning of the digital age.

2002

DRAM memory invented.

1963

First hard drive sold to the public by IBM.

1956

Seagate projects data production will reach 44 Zettabytes per year.

2020

Digital Data reached 0.02 Exabytes.

1986

Seagate reported data production reached 3.5 Zettabytes per year.

2014

Data storage innovations accelerate capacities.

Big Data and Visualization

We are producing an increasingly large amount of structured and unstructured data from the internet, social media, multimedia, communications, sensor networks, machine logs, commercial transactions, business applications and the latest scientific instruments. We are producing an unprecedented huge amount of data in a variety of new forms (e.g., documents, audio, video) which social media and mobile applications need real-time streaming across high-speed networks.

Big Data is the general term for data whose volume, velocity, and variety challenge available storage and computing capacity. The size of the individual datasets has reached petabyte and exabyte scales and includes many different media formats (e.g., documents, audio, video). The size of the individual datasets is growing rapidly and exceeds traditional database management systems capabilities. The size of the individual datasets exceeds traditional database management systems capabilities.

Visualization refers to the meaningful visual representation of ever complex information contained in this data. There is an unmet need for a literate workforce to handle these trends. In this digital era, there is an urgent need for a literate workforce to handle this data. We are producing an increasingly large amount of structured and unstructured data from the internet, social media, multimedia, communications, sensor networks, machine logs, commercial transactions, business applications and the latest scientific instruments. We are producing an unprecedented huge amount of data in a variety of new forms (e.g., documents, audio, video) which social media and mobile applications need real-time streaming across high-speed networks.

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