CLEAN ENERGY INSTITUTE

DIRECT: Data Intensive Research Enabling Clean Technologies

A graduate training program for UW graduate students interested in data enabled discovery and design of advanced materials for clean energy

PROGRAM DETAILS

Discovering new materials that will generate and store renewable energy in a low cost, environmentally benign and scalable fashion is perhaps the most important technological challenge facing society today. However, all phases of this scientific process – design, synthesis, and characterization – are routinely stymied by the same challenge: researchers are not equipped to handle the deluge of data coming from their labs and high performance computers. DIRECT, a Clean Energy Institute training program, funded by the National Science Foundation, provides training that will equip a new generation of energy researchers to handle the massive data sets arising from all stages of materials discovery.

DIRECT provides UW graduate students the opportunity to receive data science training, practice applying new tools and skills in a project-based learning environment, and gain experience working with industry and academic partners on a team-based capstone project.

APPLICATION & QUALIFICATIONS

No previous data science training is required. PhD students should be in the second year of their program. MS students should be in their first year. Interested MS students should contact their graduate program coordinator.

Applications are available each summer for PhD students and each fall for Master students.

As a DIRECT trainee, you will:

- Participate in a customized 2 course sequence to gain supplementary training in data sciences and materials design and, if desired, take intensive "crash courses" in scientific computing and iPython.

- Work with a team on a data-intensive research project, receiving regular feedback from project sponsors and training experts.

- Opportunity for internships with industry partners.

- Participate in data science seminars, events, training, and professional development activities organized by the Clean Energy Institute, the eScience Institute, and the DIRECT program.

- Have the opportunity to apply for stipend and tuition support to complete an independent data science project after completion of coursework and team research project.

MORE INFORMATION

For further details about the program, visit
depts.washington.edu/uwdirect/

W

DIRECT: Data Intensive Research Enabling Clean Technologies

A graduate training program for UW graduate students interested in data enabled discovery and design of advanced materials for clean energy

ABOUT THE TRAINING PROGRAM

DIRECT is a graduate training program of the Clean Energy Institute, funded by the National Science Foundation Research Traineeship Program (NRT). It is comprised of three phases: 1) new graduate coursework at the nexus of data science and advanced materials for energy, 2) a project-based learning (PBL) that allows trainees to apply new skills and work on challenging real-world problems in a team-based setting, and 3) capstone experiences that leverage broad networks spanning industry, national labs and several international partners. The thematic focus of the research is next-generation materials for batteries and photovoltaics. The project based learning component of the traineeship will provide graduate students the chance to teach and practice leadership and management skills, a unique opportunity most trainees would not otherwise receive. DIRECT trainees who complete the program will be credentialed and equipped for many new career options that require data science training and prepared with the skills needed to thrive in the economy of the 21st century.

TRAINEESHIP SCHEDULE

Acceptance into the program provides a 1-year designation as a DIRECT trainee

- *Autumn Quarter:* DIRECT trainees will participate in a data science crash course to get an early start.

- *Winter Quarter:* DIRECT trainees will participate in 2 course sequence to gain comprehensive training in Python programming, statistics, data science methods, and practical application of data science to molecular and materials problems.

- *Spring Quarter:* DIRECT trainees will work in project teams on a real research project/problem related to issues of data management, processing or statistics as applied to design of new materials. Program staff and faculty will customize the project experience to be relevant to trainees PhD or MS theses/projects.

- *Summer Quarter:* DIRECT trainees will have the opportunity to apply for Data Science Accelerator Award to support an independent innovative data science project related to their thesis project.

PARTNERS

University of Washington eScience Institute
Pacific Northwest National Laboratory
Optimum Energy
Bellevue College

LEARN MORE

To learn more about the program, visit depts.washington.edu/uwdirect/