DEPARTMENT OF COMPUTER SCIENCE

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Project BPC Plan

PI Lovelace is the CS@Mines Data Chair and will Track data for disaggregated participation and retention data for the department (Activity 1). Co-PI Turing will coordinate and facilitate visits with the CS@Mines On Tour K-12 outreach program (Activity 2). Details are provided below.

Activity 1: Track Data for Departmental BPC Activities

1. Context & Goals

CS@Mines demographics are (Fall 2019):

- 679 undergraduate students (21.8% women; 21.5% URG[1])
- 115 graduate (M.S. and Ph.D.) students (23.5% women; 11.3% URG)
- 13 Tenured/Tenure-track faculty (15.3% women; 0% URG)
- 4.5 Teaching Faculty, including Professor of Practice (33.3% women; 0% URG)

Recent analysis of retention data indicated no issues currently exist (i.e., CS@Mines retains women and students from URG at similar rates). A recent student survey also showed no culture concerns by any one group.

Tracking demographic data on our students can help monitor the impact of our departmental BPC activities and achieve our department goals listed in our Departmental BPC Plan, which is an approved departmental plan by BPCnet.org and can be found at https://bpcnet.org/wp-content/uploads/2020/06/CS@Mines-Dept-BPC-Plan.pdf

Activity Motivation: In order to monitor the impact of our departmental BPC activities, it is vital to track demographic data on our students annually (to both monitor progress of our BPC activities and note any area of concerns). As noted in the CS@Mines Departmental Plan, PI Ada Lovelace is the CS@Mines Data Chair and is responsible for monitoring our department's demographic data.

2. Intended Population

Activity Participants: N/A (data on undergraduate and graduate students in CS@Mines, broken down by women and racial/ethnic groups, will be gathered/analyzed)

Participant Recruitment: N/A

3. Strategy

Responsibilities of PIs: PI Lovelace is the CS@Mines Data Chair, responsible for annually collecting/analyzing demographic data on our students.

[1] URG = students from under-represented groups in computing: Hispanic/Latinx, African American, American Indian, Native Alaskan, Native Hawaiian/Other Pacific Islanders, and persons with disabilities.

Activity Content: As Data Chair, PI Lovelace will collect/analyze the following data (broken down by gender and racial/ethnic groups): (1) Admissions data (e.g., number of applications, acceptances, and enrollments for CS), (2) Major data (i.e., number of undergraduate majors, M.S. students, and Ph.D. students), and (3) Retention/Attrition data (e.g., number of undergraduate students that leave the CS major and when, students who are retained from our CS1 course to CS2 course, etc.). PI Lovelace will collect this data immediately after the Fall Census day. PI Lovelace will then create a report that highlights historical/recent trends and any areas of concerns. This report will be shared with all faculty in the CS@Mines Department by mid-October, so it can be used to determine BPC activities/plans for that academic year. The Department Head will also use the data in the report to update the CS@Mines Departmental BPC Plan annually.

Activity Budget: N/A

4. Preparation

PI Lovelace has prior experience in collecting/analyzing data. She will continue to work with the following offices at Mines to gather the demographic data mentioned: Admissions, Registrar, and Institutional Research.

5. Evaluation

PI Lovelace and the CS@Mines Department will meet shortly after the report is finalized to discuss the data report developed by PI Lovelace and determine what BPC activities/plans the department faculty should focus on for that academic year.

Activity 2: Participate in CS@Mines on Tour

1. Context & Goals

As mentioned previously, CS@Mines undergraduate demographics are (Fall 2019):

- 679 undergraduate students (21.8% women; 21.5% URG)

Recent analysis of retention data indicated no issues currently exist (i.e., CS@Mines retains women and students from URG at similar rates).

Activity Motivation: Through this activity Co-PI Turing will contribute to the following CS@Mines' BPC Goals listed in the CS@Mines departmental plan (posted on BPCnet.org):

- Increase participation of undergraduate women from 21.8% to 25% by 2024 (Mines 150th anniversary) and 30% by 2030 (to achieve gender parity with Mines).
- Increase participation of undergraduate students from URG from 21.5% to 25% by 2024 (Mines 150th anniversary) and 30% by 2030.
- Ensure retention data continues to be equivalent for all demographic student groups.

2. Intended Population

Activity Participants: Students from URG (mainly Hispanic/Latinx students, as 33.5% of Colorado High School students are Hispanic, 53.8% are White, and all other groups make up less than 5%) and women from local K-12 schools.

Participant Recruitment: Co-PI Turing will work with the coordinator of the CS@Mines On Tour program to reach the intended population. CS@Mines On Tour prioritizes visiting K-12 schools that have a high percent of students on free/reduced lunch.

3. Strategy

Responsibilities of PI: Co-PI Turing will:

- Recruit undergraduate students from his 200-level CS course to visit local K-12 schools.
- Work with the CS@Mines On Tour coordinator to train recruited undergraduate students on best practices to encourage students from groups underrepresented in computing.
- Schedule at least 6 visits to local K-12 schools during the fall semester and accompany the undergraduate students to the high schools visited to engage in Q&A about studying CS.
- During spring semester, Co-PI Turing will contact teachers in the schools they visited to invite interested students to the campus and arrange an interactive tour of CS labs.

Activity Content: As part of the CS@Mines On Tour program, CS@Mines students travel to K-14 schools with an interactive presentation about CS that encourages interest in CS for the goal of broadening participation in computing. Students involved in On Tour also create a supportive community that helps with the department's retention goals. More details about this program can be found at https://csontour.mines.edu. This activity creates interest in CS for the K-12 students and provides the CS@Mines undergraduate students the opportunity to engage with their field of study and help with their own retention in computing.

Activity Budget: The involved undergraduate students will be paid hourly for their time, which will cost ~$1,250/year to visit a school every week during the fall semester. Two undergraduate students attend each visit together. Co-PI Turing will also attend all visits to high schools.

4. Preparation

Co-PI Turing will work with the program's coordinator and faculty previously engaged in the CS@Mines On Tour program to learn and adopt best practices for recruiting K-12 students.

5. Evaluation

Co-PI Turing will use demographic statistics for CS@Mines to track recruitment of women and students from URG. Activity 1 in this project BPC plan details PI Lovelace's plan for collecting and analyzing demographic data, which will be shared with Co-PI Turing.