BPC Plan
Northwestern University
Department of Computer Science

Effective dates of plan: 2020 - 2024
Revision of plan will begin: January 2021
Contact: Bryan Pardo, CS Faculty Diversity Committee Chair - diversity@cs.northwestern.edu

Context

Northwestern University (NU) is a private research university based in Evanston, IL. Chicagoland is racially/socioeconomically diverse (22.1% Hispanic, 16.7% Black) but has struggled with a history of housing discrimination and segregation that has restricted opportunity. The Northwestern Class of 2023 is slightly more diverse than previous cohorts (12.6% Hispanic, 1.1% Native American / Indigenous, 10.2% Black) but still does not reflect regional or national demographics. NU is uniquely positioned in a town which has acknowledged its history of structural racism, pledged to address inequity, and has made national headlines for tentative steps towards reparations. The Computer Science Department was founded in 2018 after a split from the former EECS Department and offers BS, MS, and PhD degrees. Gender diversity among the CS student population has seen recent improvements (women are 29.5% of the undergrad CS population, 22.3% of the graduate CS population) but still lacks the parity seen at the university level. Racial/ethnic diversity within CS is an area of concern for both the undergrad (8.11% Hispanic, 0.44% Native/Indigenous, 2.85% Black) and graduate (2.7% Hispanic, 5.4% Black) populations. Similar patterns persist at the faculty level for both tenure-track (16.7% women, 14.3% Black/Hispanic/Indigenous) and clinical (33.3% women, 0% Black/Hispanic/Indigenous) appointments.

Goals

[Goal 1 Undergrad Growth] Improve the participation of women, Hispanic, Black, Indigenous and people with disabilities in all aspects of undergraduate computer science programs. These groups are currently underrepresented in computer science relative to their standing in the university in general. As a long term goal, we aim to achieve demographic parity by having the representation of each of these groups within computer science match their representation at the university level. This will be difficult to achieve within the effective dates of this plan, so we set intermediate targets of 30%, 75%, 125%, and 35% increases for Hispanic students, Native American / Indigenous students, Black students, and women, respectively within the CS undergraduate population by 2024. These targets would cut the representation gaps in half for each of these groups.

[**Goal 2 Undergrad Community**] Build student confidence and community with the aim of improving retention of underrepresented groups. We aim to not only increase the number of students who stay in the program, but enhance their experiences so that they can thrive. By 2024, we will reduce attrition of underrepresented groups to be on par with the general student population.

[Goal 3 Grad Support] Improve mentoring and engage in community building activities to support existing graduate students and attract new students with the aim of increasing participation of women and people who identify as Black, Hispanic and/or Indigenous. We aim to have the majority of women and graduate students who identify as Black, Hispanic and/or Indigenous report a high degree of satisfaction with the support, mentoring, and sense of community provided by the department.

[Goal 4 Outreach] Design effective K-12 outreach programs that develop engagement in computer science and promote inclusivity in computing.

Activities and Evaluation

Modify introductory CS courses: We will continually revise courses early in the CS major to ensure that they are appealing and engaging to all. We will apply appropriate pedagogical structures that have

been shown to have a positive impact for students underrepresented in computing. We will use NCWIT's Entry Survey or Student Experience of the Major to evaluate success. [Contact: Profs. Sood/Horswill, Goal 1]

Attract CS+X Majors: We will develop and/or promote joint majors in areas like CS and biology that are attractive to underrepresented students. We will use NCWIT's Entry Survey to understand the impact of these activities. [Contact: Profs. Hester/Van Wart, Goal 1]

Train faculty in best practices for BPC: The department will participate in both national and institutional programs that improve faculty awareness of diversity and inclusiveness (e.g. NU Searle Center's Faculty Roundtable Series and NCWIT's Introduction to Diversifying Undergraduate Computing Programs). We will track participation in these programs and recognize faculty who attend, engage, and apply what they learn. [Contact: Prof. Joseph, Goals 1,2 and 3]

Participate as BRAID Affiliate: As an affiliate of this program during 2020, we are learning best practices from peer institutions with a historical record of improving diversity within their programs. [Contact: Prof. Sood, Goals 1,2, and 3]

Funding Travel to Diversity Focused Conferences: We will sponsor annual trips for students to attend the Grace Hopper Conference and Tapia Celebration of Diversity in Computing. Faculty attendance and participation is encouraged. We will conduct surveys to understand what sessions/activities students find most valuable and try to provide appropriate support within our department/university. [Contact: Prof. Khuller, Goals 2 and 3]

Support Student Affinity Groups: The department supports student lead affinity groups: Women in Computing (WiC) [Contact: Prof. Sood], Grad Women in CS [Contact Profs. Rogers/O'Rourke]**,** Code'n'Color [Profs. Hester/Joseph/Worsley], Latin@CS [Contact: Prof. Pardo] [Goals 2 and 3]

CS Buddy Program: This student led program supports freshmen and transfer students who intend to declare or have already declared a CS major or minor by helping them to navigate undergraduate CS at Northwestern and find community[Contact: Prof. Tarzia, Goal 2]

Faculty Visits/Talks at HBCU and Hispanic Serving Institutions: Faculty will conduct outreach to HBCU and Hispanic serving institutions through faculty visits and talks to encourage students to pursue graduate studies. We will monitor graduate admissions data to understand how these visits impact applications. [Contact: Prof. Pardo/Worsely, Goal: 3]

Expand opportunities for research: The department will accelerate current efforts to recruit students from underrepresented groups via research opportunities for undergrad (REUs). Faculty are encouraged to participate in the DREU program and the Northwestern Significant Research Opportunities Program (SROP). We will use feedback associated with these programs to evaluate success. [Contact: Profs. Worsley/Sood, Goals 2,3]

K-12 Teacher/School Outreach Programs: Several faculty in the department have a history of engaging the community in particular K-12 students through outreach activities (e.g. D65 STEM Fest regularly features a booth run by Marcelo Worsley's TILT Lab). We plan to coordinate these efforts across the department and offer them on an ongoing basis for local (a) high school teachers and (b) high school students with the aim of building a diverse pipeline of students. These programs will draw on expertise within NU (including CS+Education faculty). We will use NCWIT's K-12 Pre/Post Surveys to evaluate these activities. [Contact: Profs. Horn/Worsley/Cossairt, Goal 4]

Surveying students and tracking progress: The department will collect information about the student experience in undergraduate and graduate programs. The department will partner with CRA (DataBuddies) and NCWIT (Student Experience of the Major) to conduct surveys. [Contact: Prof. Tarzia, Goals 1,2,3]

Maintain diversity statistics: Continually update all statistics pertaining to diversity and inclusion. Collect and maintain data necessary to support attrition statistics. [Contact: Prof. Tarzia, Goals 1,2,3]