CRA Report on Minority Serving Institution Engagement in Computing Research

Best Practices for Partnerships of Academia and Industry with Minority Serving Institutions

August 2024 (Version 2)

CRA
Computing Research Association

CRA-WP
Computing Research Association
Widening Participation

CRA Report on Minority Serving Institution Engagement in Computing Research:

Best Practices for Partnerships of Academia and Industry with Minority Serving Institutions

July 2024 (Version 1)

Kinnis Gosha

Morehouse College, Kinnis.Gosha@morehouse.edu, https://orcid.org/0000-0001-8605-4672

Maria Gini

University of Minnesota, gini@umn.edu, https://orcid.org/0000-0001-8841-1055

Patricia Morreale

Kean University, pmorreal@kean.edu, https://orcid.org/0000-0002-7954-2122

Abstract:

The report outlines best practices for academic and industry representatives to engage with Minority Serving Institutions to partner in research activities and student recruitment.

This report is a joint effort of the Computing Research Association and its **CRA-Widening Participation (CRA-WP)** subcommittee. CRA-WP is dedicated to broadening participation and enhancing access, opportunities, and experiences for individuals from populations underrepresented in computing research and education. Through its programs, people, and resources, CRA-WP provides mentoring and support at every stage of the research pipeline, from undergraduate students to faculty, as well as government and industry researchers.

1. Introduction

This report summarizes high-level best practices for how faculty at research-intensive non-minority-serving institutions and industry partners can develop mutually beneficial collaborations with the computing faculty and departments at minority-serving institutions (MSIs), particularly emerging research institutions (RRIs). Examples of collaborations include funding proposals, co-authored articles, and student recruitment. Successful collaborations are almost always built on personal engagement over time, and this guide outlines how to encourage and sustain such collaborations. It is important to remember that MSIs often have distinct missions which may differ from non-MSI institutions.

> **This guide is not comprehensive, as there is great breadth and variety to MSIs, but will hopefully provide a starting point for future contributions and versions.**

Subject matter experts representing multiple MSIs, research-intensive institutions, and relevant organizations reviewed the report. The report is designed to serve as a preliminary resource for stakeholders wishing to collaborate with MSI faculty. It is divided into two main parts: Section 2 discusses how non-MSI faculty and industry can engage with MSI faculty and develop research collaborations. Section 3 discusses methods for MSI student recruitment and relationship building. In the Appendix, there is a list of the different types of MSIs and their commonly used acronyms.

2. MSI Faculty

The following sections highlight best practices for engaging and building successful long-term collaborations with faculty from MSI computing programs.

2.1 Engagement with MSI Faculty

This section addresses ways of connecting and engaging with MSI faculty.

1. *Research the MSI institution and department before reaching out.* MSIs vary widely and cannot be considered a monolithic community—public and private schools, R1, R2, emerging research institutions, and primarily teaching institutions are just a few examples of the differences between MSI schools. Seek out basic information about faculty members before reaching out for a collaboration. See what degrees are offered and at what level. Find out what type of students that institution serves, its size, location, and what it is known for.

2. *Understand MSI Faculty Responsibilities.* Seek to understand faculty workloads and teaching responsibilities. Faculty at MSIs **may** have higher teaching loads (e.g., three or four courses per term), classes without teaching assistants, multiple course preparations, last-minute course additions/changes, student advisement responsibilities, institutional service requirements, industry engagement, engagement with non-profits, overload

sections, and lack of support staff. Summer funding for faculty varies across institutions, often depending on the availability of research grants.

3. *Understand the impact of your proposed collaboration compared to other faculty needs.* A lack of a reply may not mean an MSI faculty member does not want to collaborate. It could be that the faculty is just overwhelmed with the responsibilities outlined in the previous point. Regard this as relationship-building for potential long-term collaboration and be patient and gently persistent for future collaboration opportunities.

4. *Compensate MSI faculty for student recruitment.* Recruitment examples include summer research programs, such as REUs or DREU, or graduate programs. Recruiting students requires a time investment to become knowledgeable about the program, advise the program they are recruiting for to support students inclusively, advise students about the opportunity, answer student questions, and guide students through the application process for the opportunity.

5. *Support capacity-building initiatives at MSIs.* Initiatives that contribute to the long-term growth of the MSI program should be considered. From your perspective, how can you or your program contribute to building capacity at the MSI? Remember that the MSI may need more financial resources to continue specific initiatives after the initial investment. Sustainability is more accessible when the initiative aligns with the established goals of the department or institution and is part of an ongoing relationship. Remember that initiatives that include teaching support (e.g., guest lectures, co-taught courses, graduate teaching assistant support, course release, etc.) for faculty could free faculty to do more research.

6. *Identify other ways to engage faculty.* Sample engagement opportunities include MSI faculty events, networking through professional organizations, and collaborating on community service projects.

2.2 Research Collaborations with MSI Faculty

The following section focuses explicitly on collaborative grant proposal submissions.

1. *Learn about MSI faculty research experience*. MSI faculty often have prior research experience and can contribute to research activities on the proposed project. Explore funded grants, personal websites, online articles, and published papers. At some MSIs, faculty research may frequently include undergraduates, where work is disseminated through oral and poster presentations. Researchers should consider the content and subject area of the publication, not just the dissemination mechanism.

2. *Explore various ways faculty can participate in the grant proposal.* Ask the faculty members what role they would like to serve in the proposal development process. Including MSI faculty members in the research plan and budget for proposal submissions helps define the collaboration. Some faculty members prefer to be Co-PIs on a proposal, while others prefer to be consultants. **Do not assume MSI faculty want to be limited to broadening participation in computing (BPC) activities; in other words, MSI faculty should be considered for research and not only for BPC, outreach, and education activities.** Realize that faculty preferences may change over time, given career

advancement or other factors, so re-check with every new opportunity. MSI faculty often have grant writing experience and can contribute to the proposal's development. The benefits and/or experiences for MSI faculty should be clear - direct payment, course release, or teaching assistant support are some avenues. It must also be clear **how** the collaboration would benefit MSI faculty. For example, the collaboration could help the MSI faculty partner pursue tenure and/or promotion, accomplish departmental goals, or provide much-needed financial support.

3. *Start the engagement early.* Provide ample time to complete the submission process. MSI faculty don't want to be considered an afterthought, instead engage them early in the proposal development process. MSIs may take longer for institutional approval; approvals may require approval at either the Provost or CFO levels at the MSI. Throughout the approval process, it may not be clear what each signature represents. Provide templates for letters of support and/or statements of work (if requested) and adequate lead time.

4. *Understand any unique challenges with the grant proposal submission process.* Several issues may arise in the grant submission process for the faculty member or the institution. Discuss the grant submission process and review the submission procedures to uncover any problems early. These issues may include institutional politics, unclear processes, a lack of flexibility in the grant submission process, or a lack of institutional support that departments or research offices often provide for faculty developing research proposals. Be open and flexible on ways to integrate MSI collaborators into the budget of your grant proposal, including as a CoPI, sub awardee, or contractor. Other considerations include challenges with spending grant funds post-award or an inability to participate fully due to high teaching loads. Solutions to teaching load issues could include funding teaching assistants, co-instructors for courses, or course release. When grant funds are typically too challenging to spend, faculty may prefer the funding be distributed directly from the host institution.

3. MSI Student Recruitment and Relationship Building

The following section explicitly focuses on recruiting MSI computing majors for summer research or graduate study, and programs to support this goal. Example programs include [CRA-WP DREU](#) summer research program for undergraduates, the [Workshop for Inclusion, Diversity, Equity, Accessibility, and Leadership Skills (IDEALS)](#), and the [Grad Cohort Workshop for Women](#) for graduate students.

1. *Plan intentional institutional visits.* Prepare for institutional events with the MSI student engagement committees and bring food and swag. Avoid planning visits during peak instructional times, homecomings, finals, or during the summer. Keep in mind that the time for visiting research-intensive institutions may not be convenient for the students or the staff hosting the visit. Additionally, offer something besides a pitch, such as technical training, interviews, and resume reviews. If appropriate, discuss plans for your next visit, understanding that recruitment is part of a larger relationship-building with the department. If possible, bring along (or connect by Zoom) your graduate students or alumni to share their experiences.

2. *Follow up after the visit.* An institutional visit should be more than just "checking a box." Consider ways to follow up after the visit. This could include bringing interested students to your campus where they can meet faculty members, meet current students, tour the labs, and tour the campus.
3. *Identify the proper campus hosts.* Many MSI computing faculty may receive several requests to host external guests for campus visits. Hosting these events may not be the responsibility of the faculty member or even the departmental administrator but that of their career services office. If bypassing career services, consider leaving, for example, a financial show of appreciation for the department, purchasing lunch for students or faculty, or something for the faculty member to express your gratitude. One example could be a gift card to a local restaurant.
4. *Be honest about your program*. While the goal of an institutional visit may be to recruit students for graduate study, remember that not every student may be a good fit in every institution's graduate program. Share current enrollment numbers, known challenges for underrepresented students, and resolutions to address them. Are there minimum GPA or GRE score requirements? Highlighting current underrepresented graduate students and graduate alumni of the program could also be useful. After your visit, provide occasional updates about your program, students, or other topics you discussed during the visit to your host to sustain the relationship and keep in touch for future collaborations or partnerships.
5. *Provide valuable incentives for students to attend.* When attending recruitment events on campus, guests should bring food and swag in addition to valuable information. The food options should be better than what students can get in the dining hall. This will help the MSI host with recruiting students and make your visit stand out. Consider aligning your visit with an ACM or comparable student chapter meeting, and work with the faculty advisor and student hosts to organize the event; treat the students to a professional experience with appropriate food. Provide application fee waivers for the students interested in applying to your graduate programs.
6. *Include strategies to retain graduate students.* Address the retention strategies employed to retain minority talent, including issues that may arise in pay, time, and politics. Other points include minority numbers, mentoring programs, mental health resources, and department community engagement. Local availability of regional and ethnic foods, apartment rents, hair salons, barber shops, public transportation, churches, and other organizations are essential for student fit and success and should be mentioned if possible. Highlight successful examples of students from similar backgrounds and institutions. If there is a difference in the local cost of living from the current student location, discuss it, explain what it might be, and what this means for students. Identify what is done if assistance is available to locate and pay for housing. For many students, funds to support relocation may not be well understood or absent; suggestions about dorms, managing security deposits, Airbnbs, or housing locations are highly valued.

A. APPENDIX

MSI Types/Acronyms
- **Hispanic Serving Institutions (HSI)** are accredited, degree-granting, public, or private nonprofit institutions of higher education with 25% or more total undergraduate

Hispanic full-time equivalent (FTE) student enrollment. Compared to similar non-HSI institutions, HSIs may have a higher enrollment of low-income students and low average educational and general expenditures per FTE student. [cite HSI]

- **Historically Black Colleges and Universities (HBCUs)** are defined as any historically black college or university that was established before 1964, whose principal mission was, and is, the education of Black Americans, and that is accredited by a nationally recognized accrediting agency. There are 107 HBCUs in the US, many in the East, enrolling more than 228,000 students. [Cite HBCU]
- **Predominantly Black Institutions (PBIs)** are mainly public two-year institutions that serve 6.8% of the entire Black postsecondary student population in the U.S. A PBI has at least 1,000 undergraduates, 50% low-income or first-generation, 40% of students who identify as Black Americans, and a low expenditure per full-time undergraduate student when compared to other institutions offering similar instruction. In 2023, 69 PBIs existed, and 316,526 students were enrolled. Many are in the South and Southeast; Illinois also has several PBIs. [cite PBI]
- **Tribal Colleges and Universities (TCUs)** are public institutions chartered by federally recognized American Indian tribes or the federal government. They provide culturally relevant information for Native students and have a majority Native American or Alaska Native student enrollment. There are 35 accredited TCUs in 15 states, serving over 250 recognized tribes. [cite TCU]
- **Asian American Native American and Pacific Islander Serving Institutions (AANAPISIs)** are colleges or universities with an undergraduate enrollment of at least 10% Asian American and Pacific Islander. At least 50% of the institution's degree-seeking students must be low-income. Primarily public two- and four-year institutions, AANAPISIs educated 33% of all Asian American or Pacific Islander (AAPI) students in fall 2020. Present in 27 states and territories, AANAPISIs are located mainly on the West Coast, in Hawaii and the Pacific territories, and a few in New York. [cite AANAPISI]
- **Emerging Research Institutions (ERIs)** are higher education institutions with established undergraduate or graduate programs with less than $50,000,000 in Federal research expenditures. Many of these are also MSIs. [cite ERI]

REFERENCES

HACU. (2011). Hispanic Association of Colleges and Universities - HSIs. Hacu.net.
https://www.hacu.net/hacu/HSIs.asp

Digest of Education Statistics, 2022. (n.d.). Nces.ed.gov.
https://nces.ed.gov/programs/digest/d22/tables/dt22_312.40.asp

What is an HBCU? | White House Initiative on Historically Black Colleges and Universities. (2018). Ed.gov.
https://sites.ed.gov/whhbcu/one-hundred-and-five-historically-black-colleges-and-universities

Full list of HBCUs. (n.d.). Www.thehundred-Seven.org.
https://www.thehundred-seven.org/hbculist.html

Predominantly Black Institutions (PBIs) – PNPI. (n.d.).
https://pnpi.org/issue-primers/predominantly-black-institutions-pbis/

Tribal Colleges & Universities – American Indian Higher Education Consortium. (n.d.).
https://www.aihec.org/tribal-colleges-universities/

openmedium. (2019, November 27). Tribal Colleges | American Indian College Fund.
https://collegefund.org/tribal-colleges-and-universities/

Asian American and Native American Pacific Islander Serving Institutions – PNPI. (n.d.). Retrieved July 18, 2024, from
https://pnpi.org/issue-primers/asian-american-and-native-american-pacific-islander-serving-institutions/

Coalition, E. R. I. (n.d.). Emerging Research Institutions Coalition. Emerging Research Institutions Coalition. Retrieved July 18, 2024, from https://eri-coalition.org/