

Closing the Gap: Building Internship Programs for Career Readiness*

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Abstract

The need for academic institutions and organizations to provide internship opportunities for their students is vital for student academic and career success, especially in STEM, given the market growth and competition in this field. Building strong connections with industry partners is essential for providing STEM students with experience working on industry-level products and research. This paper details our institute's summer internship program, shares some insight into our contracts with industry partners, and discusses how our summer interns are evaluated, selected, and matched with projects for their summer internship. We hope this paper will provide guidance for other academic institutions interested in developing a similar program to grant more students access to invaluable career development opportunities.

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1 Introduction

As the 4th Industrial Revolution unfolds, collaborations between industry and higher education are becoming ever more critical to ensure that academic institutions are graduating students with the knowledge and skills to be successful and competitive in the workplace [3, 4, 5]. Student readiness can be enhanced via internships that rely on cross-sector educational and professional networks. In particular, internships provide an effective way to foster the inclusion of underrepresented students in computing and STEM fields [1, 2]. In these efforts, we established the National Science Foundation (NSF) funded (grant award No. 1832282) Institute for Interdisciplinary Science (i4) [6] at our university to support interdisciplinary research, training, and professional development among STEM faculty, staff, and students. One of our most effective initiatives is the i4 Summer Internship Program. This program utilizes cross-sector cooperative agreements with leading local and national STEM organizations to provide students with fully-funded internship opportunities. It supports underrepresented students pre- and post-internship and introduces them to industry-level applications and products. If given the proper financial support, i4's Summer Internship program is easily replicable across other universities and organizations. This paper will walk through i4's process of creating cooperating agreements with companies, evaluating applicants, preparing students for interviews, equitable hiring practices, weekly check-ins, and post-internship growth opportunities.

Our compensation strategy is the key to i4's Summer Internship Program's success. Participants in i4's Summer Internship Program are paid (\$5,000 for full-time eight-week internships) solely through our institute's budget. By providing companies with no-cost interns, i4 can attract industry partners and unique internship experiences. Funding the internships creates highly marketable internship opportunities for our students, ensures they receive equitable compensation, and strengthens the Institute's connections and appeal among local industry leaders.

This paper is organized as follows: Section 2 describes the call for new industry partners and lists the major points of the cooperating agreements. Section 3 discusses the student application process, evaluating applications, and interviews with industry partners. Section 4 discusses the student hiring and onboarding process. Evaluation data collection and post-internship proceedings are discussed in Section 5, followed by our concluding remarks in Section 6.

2 Building Connections with Industry Partners

A successful internship program starts with building connections and co-signing cooperating agreements with industry partners. This section describes the “Call for Partners” that we use to invite new industry partners every year and provides insight into the agreements we develop for industry partners that standardize expectations around providing safe, meaningful work experiences for our students.

2.1 Call for Partners

The Call for Partners occurs in October through December prior to the internship period. Beginning with a description of our university and institute’s mission statement, the Call for Partners explains the funding, modality, and timeline of i4’s Summer Internship Program. Each year, this call is sent out to i4’s established partners and is promoted on i4’s website, social media, and LinkedIn accounts. The call is often sent directly via alumni or other personal networks, which has been particularly useful for forming local partnerships. The Call for Partners lays the foundation on which i4’s cooperating agreements are built.

2.2 Cooperating Agreements

The i4 Summer Internship Program hinges upon a carefully crafted cooperating agreement with industry partners. The i4 team works with company representatives to get the cooperating agreements fully signed by January prior to the internship summer period. The University Risk and Compliance Office ensures our cooperating agreement contracts utilize language to create safe and meaningful working conditions for our interns. The i4 summer interns are designated temporary university employees, ensuring that students are protected by all federal and state laws while working off-campus at our industry partner’s locations. These protections include but are not limited to Title IX, federal and state labor laws, and worker’s compensation in the case of injuries during employment. Additionally, the agreement asserts that the industry partner will be solely responsible for ensuring a safe work environment in a commercial setting free from hazards. Also, the i4 interns follow the university’s labor rules for all student employees. As stated in the cooperating agreement, “no student shall perform work in excess of twenty hours per week during the regular school year or in excess of forty hours per week during the summer term.”

The cooperating agreements also restrict the power of the industry partner’s non-compete requirements to avoid placing limitations on students’ ability to seek similar work at different companies upon graduation. Because of this,

industry partners must provide any forms or agreements to be signed by the intern, allowing the University Risk and Compliance Office to review and dispute any clauses that put students at a disadvantage. The cooperating agreements safeguard student labor and ensure the students can pursue their career goals upon graduation.

The cooperating agreements not only place limitations and protections on student internships, but also define what the industry partners must provide to ensure a high-quality internship experience. The agreement states that industry partners are primarily responsible for the supervision of the student interns and the work performed by participating students, noting that an internal professional will provide supervision of the intern with expertise in educational and professional background in the field of experience. Students thus will be given consistent and applicable mentorship for their internship projects, strengthening their skills and building their professional networks.

Once the cooperating agreements have been signed by both parties (the industry partner and the university), the i4 team finalizes the list of industry partners for placing students interns over the summer. After the cooperating agreements are signed, we work with our partners individually to determine the number of interns they can support, the types of potential student projects they would have opportunities for, and what student expertise they are seeking.

3 Application Process and Student Selections

The i4 team initially screens applicants to create a short list of student candidates for each industry partner. Representatives from the industry partners then interview their applicants to create the best pairs between students, partners, and projects. This section details this process and the resources we provide our students to succeed in an interview.

3.1 Application and Applicant Evaluations

The summer internship application is open during February. The application consists of 20 questions, some with multiple components. Application questions gather information regarding student demographics, contact information, professional references, company preferences, resume, transcript, and several short answer questions. Critical questions include:

1. What are your post-graduation career goals? How would an i4 internship support you on the path towards those goals?
2. How would working for your selected companies align with your career goals and expectations?

3. Describe any past job experience or previous internships.
4. Describe any life experience or additional information that would distinguish you from other applicants. In other words, why should the i4 team select YOU?

Each member of the i4 team evaluates student applications using the rubric shown in Figure 1. For the transcript and previous job experience pieces, the i4 team prioritized underrepresented students by altering the expected rankings. Transcripts are scored 1 point for a 0 – 2.49 GPA, 2 points for a 3.5+ GPA, 3 points for a 2.5 – 2.99 GPA, and 4 points for a 3.0 – 3.49 GPA. This allows i4 to provide crucial experiential learning and work experience to those who might not meet the criteria for other student internship programs. Additionally, i4’s applicant rubric reversed typical scores for job experience, giving 1 point to those with “significant amount of prior relevant experience” and 4 points to students with “no prior relevant job or internship experience.” By changing the typical scoring system, the i4 Summer Internship Program attempts to increase relevant work experience among underrepresented student populations.

Criteria	1 (Unsatisfactory)	2 (Average)	3 (Good)	4 (Outstanding)
Resume	Unsatisfactory. Many of the required resume components are missing (personal information, educations, skills, experience, etc.). Key ideas are difficult to find. Frequent (more than 6) grammatical errors and typos. Not well organized and does not follow standard formats and organization.	Satisfactory. Lists some of the required resume components (personal information, educations, skills, experience, etc.). Key ideas may be difficult to find. Some (less than 6) grammatical errors and typos. Somewhat organized and may not follow standard formats and organization.	Up-to-date. Lists most of the required resume components (personal information, educations, skills, experience, etc.). Key ideas are relatively easy to find. Very few (less than 3) grammatical errors and typos. Well organized and follows standard formats and organization.	Exemplary and up-to-date. Lists all required resume components (personal information, educations, skills, experience, etc.). Key ideas are easy to find. No grammatical errors and typos. Clear and well organized. Follows standard formats and organization.
Transcript	Good Standing Overall GPA 0 – 2.49	Good Standing Overall GPA 3.5 & above	Good Standing Overall GPA 2.5 – 2.99	Good Standing Overall GPA 3.0 – 3.49
Post-graduation career goals	Goals may be superficial or missing. Connection to i4 may not be mentioned.	Vague goals, connection to i4 mission is somewhat evident but may be weak.	Includes an overview of career goals. Makes clear connection to i4 mission.	Career goals are clearly written and explained. Makes explicit and strong connection to i4 mission.
Company selection aligns with student career goals & expectations	Reasoning may be superficial, unclear, or missing.	General reasoning towards their selections without obvious connection to career goals.	Reasoning towards selection aligns with career goals.	Student clearly demonstrates relevant reasoning for company selection with explicit alignment to career goals.
Life experience. Why YOU?	Life experience examples may be generic superficial.	General examples of life experiences that may or may not be relevant.	Student includes some life experiences examples that may be relevant.	Student has clear and specific examples of life experiences that are relevant to their goals.
Previous job experience	Significant amount of prior relevant experience.	Some prior relevant experience.	Minimal prior relevant experience.	No prior relevant job or internship experience

Figure 1: Rubric used in evaluation internship applications

3.2 Interviews with Industry Partners

The i4 team selects a pool of potential interns based on their scores and the availability of their preferred internship opportunities. Selected students interview with two or three industry partners. Each industry partner is provided

two more applicants than they can support, allowing them to rank their preferences and rule out any potential applicants.

Prior to interviewing with their assigned industry partners, the pool of potential interns must attend an interview preparation event hosted by the University's Career and Professional Development Office (CAPD). The event informs students on common interview practices and offers them a chance to ask questions specific to their situation. Additionally, the CAPD representatives invite students to schedule personalized mock interviews with their team.

After the students interview with their assigned companies, the i4 team and industry partners determine the internship assignments. Following their interviews, the company representatives send the i4 team a ranking of their interviewees. The i4 team then compares students' rankings across companies and selects based on company and student preferences.

4 Hiring and Onboarding

Since hiring processes vary greatly between institutions, this paper will focus primarily on onboarding. In April, i4 hosts a mandatory onboarding event for the selected applicants. During this event, representatives from the University Risk and Compliance Office educate students on non-disclosure agreements (NDAs), university protections, and identifying non-compete clauses. The CAPD representative gives students tips on networking and making the most of their internships. Finally, the i4 team describes the hiring process and the students' requirements before, during, and after their internships.

Alongside the regular university hiring documents, students are required to sign some additional documents. First, students must sign an internship agreement detailing all student requirements for their internship period, including filing evaluations and post-internship assignments. The other remaining documents are the company-specific forms. As agreed upon in the cooperating agreements, industry partners must send over their company-specific hiring documents for University review. Once approved by the University Risk and Compliance Team, these documents are shared with students for signature prior to their internships. After the necessary documents are signed and the student is hired, the i4 Summer Interns are officially ready to begin their internships on their assigned start dates.

5 Internship Evaluation and Post-Internship Proceedings

Students are asked to record and share data about their internships during the internship, including bi-weekly timesheets, weekly reflections, focus groups, and pre-, mid-, post-internship surveys. For the weekly online reflections, the

interns write responses to prompts about how the internship experiences relate to their course work or career goals. The pre/mid/post online evaluations ask similar but more detailed questions. The in-person focus groups only occur once towards the end of the internship period and allow the interns to provide greater detail on their internship experiences. These evaluations allow the i4 team to understand the students' experiences throughout the internship and are a part of the quantitative and qualitative reporting for the grant and to assess the measured benefit of the program to our students.

The i4 interns must complete several assignments after the internship. The interns meet individually with a member of the i4 team to review their experiences. This one-on-one meeting allows i4 team members to get a more in-depth understanding of what the students accomplished during their internships and what they liked and disliked about the program itself. These interviews provide the team with insight into improvements for the following year, usually reflected in timeline edits, application changes, or discussions with specific industry partners. In addition to the one-on-one meetings, students record an informational video to talk about their internship experiences, learnings, and tips for future interns. An edited collage of these videos is shared on our YouTube page for promotional purposes, especially for future interns. The one-on-one interviews and promotional video act as tools for information gathering, program development, and marketing when appropriate.

Finally, the i4 interns are encouraged to present posters at an annual school-wide symposium in the Fall semester following their internships. These posters allow the i4 interns to share their discoveries with other students and articulate their work experience much like they would in a future job interview. The students' supervisors from their industry partners attend, which furthers the interns' networking opportunities and strengthens i4's partnerships. Post-internship presentations have become a valuable activity for all i4 participants and help to disseminate internship information to others.

6 Conclusion

The Institute for Interdisciplinary Science (i4) Summer Internship Program provides underrepresented students with industry experience and career development opportunities vital for job placement in the 4th Industrial Revolution workplace. At this point, several of our summer interns have accepted post-graduation job offers with their assigned companies, and many have pursued jobs or research in similar fields. The success of i4's Summer Internship Program can be attributed to its payment model, carefully crafted cooperating agreements, inverted rubric for selecting potential interns, and ability to adapt to participant feedback. This internship program can be replicated at other

institutions if given the proper support, granting more students access to invaluable career development opportunities.

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