Hackathons for Workforce Development: A Case Study

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ABSTRACT

In this case study, we consider the implications and observations of SLO Hacks 2020, a 36-hour hackathon with 358 attendees held on February 28 – March 1, 2020 at the California Cybersecurity Institute. Eight corporate sponsors were involved. Although students may attend hackathons with the intention of releasing a publication, launching a startup, or experimenting with the newest technology, we evaluate the activity with particular interest in workforce development. In a survey of 39 participating teams, we find the overwhelming majority interested in employment (mostly in the form of internships) with sponsoring companies. Most sponsors likewise stated that hiring was a major goal for their engagement with the hackathon. We also share discussions we held with the winning team and their future plans for their project.

CCS CONCEPTS

• **Software and its engineering** → Software creation and management; Software development process management; Software creation and management; Collaboration in software development; • **Social and professional topics** → Professional topics; Computing industry; Professional topics; Computing profession; Employment issues.

KEYWORDS

hackathons, workforce development, computing, rapid prototyping, networking

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1 INTRODUCTION

Hackathons have become popular and mainstream events in the past few years [1]. The activity has a fairly standard format consisting of team formation, work on a specific project, exhibition, and award prizes [2]. The word "hackathon" is a portmanteau of the words "hack" and "marathon", where "hack" is used in the sense of exploratory programming, not its alternate meaning as a reference to breaching computer security. We also use the term "hacker" as a synonym for a hackathon participant.

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Ever since its induction in 2017, SLO Hacks [5], a student-run hackathon organizing team at the California Polytechnic State University (Cal Poly) has been hosting quarterly hackathons to empower high school and college students to build STEM projects for social good. Teams of four college students with backgrounds typically from business, design, and engineering collaborate to pitch a proof-of-concept to judges, which usually takes form of a website, a video game, or a hardware product.

This year, SLO Hacks 2020 (Fig. 1) aligned project submissions along the verticals of Cybersecurity, Financial Technology, and Gaming. Although sponsoring companies provide incentives for building an app or project using their tools and products, students are encouraged to build passion projects that reinforce the application of learned curriculum, regardless of whether they align with verticals or companies. General, non-categorical prizes are offered by SLO Hacks in addition to company-sponsored prizes.

Although many hackathons are branded as offering participants spaces to grow technical abilities, allowing engagement in civic solutions, making new friends, and creating a startup, they are not heavily marketed as events to connect participants and sponsor companies in formal professional opportunities.

We find some references to workforce development in the background literature [3, 4], mostly citing the positive potential of hackathons for economic development. There is also at least one well-cited detractor raising alarms about the practice. The authors of "Hackathons as Co-optation ritual" [6] express concern over normalization of free labor, corporate opportunism and socialization of hackathon participants in a particular Silicon Valley inspired "new economy". Two anecdotes in particular express skepticism over workforce development at hackathons. First, is of a travel tech corporate sponsor at a hackathon saying they rarely can hire out of hackathons. ". . .we have recruited like two interns, but that's it." Second is of a video game developer and tech recruiter who says hackathons tend to be too unstructured to truly assess potential worker talent [6].

We note that two interns from five hackathons is not necessarily a bad outcome by the standards of workforce recruitment, depending on the size of the company. Students are probably exercising choice on internships. It's not clear how many interviews were held by this company or how many offers made. Furthermore, as the authors themselves point out later, that particular company may not have been terribly attractive to hackers in this hackathon.

We agree that the sprint-based, hackathon environment is less structured than that of a typical workplace, but companies do value creativity, innovation and working within constraints in their workforce (particularly tech leads and product managers), which are all qualities that are assessed to determine a student's fitness for candidacy.

We believe there is great potential in using hackathons as a platform to attract technical talent to innovative companies, and hope

Figure 1: SLO Hacks 2020

to further explore hackathons as a means of workforce development for both sponsors and participants.

In this paper, we present the results of surveys and interviews with both hackers and sponsors who attended the SLO Hacks event. We find great enthusiasm on both sides for internship placement. To ensure that our case study does not just reflect preconceived ideas, we presented sponsors with the option to opt-in for their feedback. We worked to minimize confirmation and observer bias by providing questionnaires to the hackers through blinded presentation and phrased the questions in a non-influential tone.

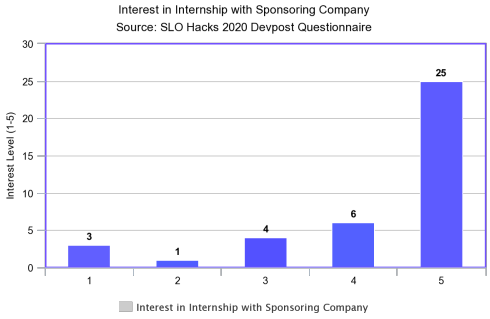

Figure 2: Recorded interest of teams in an internship with a sponsoring company (post-event)

2 SURVEY DESIGN

We designed 2 surveys for sponsors and 1 survey for participants to fill out before, during, and after the hackathon. SLO Hacks 2020 was funded by 8 corporate sponsors:

- CDK Global Inc., a global provider of integrated information technology solutions to the automotive, retail, and adjacent industries,
- Xpring, a new initiative by cryptocurrency platform Ripple that invests, incubates, and acquires entrepreneurial projects,
- Hathway, a digital innovation agency offering UI/UX design in a variety of platforms including web and mobile,
- Futek, a manufacturer of advanced sensor technologies,
- Raytheon, a major U.S. defense contractor,
- Stellar Exploration, an aerospace and aircraft manufacturer,
- TransUnion, an American consumer credit reporting agency, and
- Google Cloud Platform, a suite of cloud computing services owned by search engine tech giant Google, Inc.

A list of sponsoring companies is released on the SLO Hacks website before the hackathon, so potential attendees may base their decision to attend on which companies are sending representatives to the event.

A pre-event questionnaire was given to each sponsoring company to fill out on an opt-in basis, gauging their reasons for sponsoring the hackathon. While many vocalized their desire to promote the general brand of their company, receive real-time feedback from student developers, and evangelize solutions or toolsets on behalf of the company, 4 of the 5 sponsors (Stellar Exploration, Xpring, TransUnion, and Hathway) that sent company representatives to the event stated that hiring qualified hackers was a main goal of their attendance.

To reduce voluntary bias to the best of our abilities, we solicited responses through Devpost, a hackathon project portfolio site [7], making the question a required field to answer for project submission.

Teams that submitted their finished projects on Devpost were asked to indicate their level of agreement with the following statement: "I would like a job or internship with one of the sponsoring companies," using a numerical range of 1-5, with 1 being strongly disagree, 2 being somewhat disagree, 3 being neutral, 4 being somewhat agree, and 5 being strongly agree. 25 teams out of the 39 teams who submitted projects responded with "strongly agree," exhibiting the overwhelming enthusiasm of student participants to work with the companies that provided resource packs, prizes, mentorship, and technical support during the timespan of the 3-day event.

A panel of judges comprised of corporate sponsors, industry representatives, and Cal Poly computer science professors judged the submitted projects. Voting criteria was established through stack-ranking, where each judge identified their top 5 projects. Points were assigned to projects based on the number of times they placed within a judge's top 5 list, and the culminating scoreboard was presented to the judges, where discussions ensued to finalize the ranking of the winning teams.

A follow-up, post-event questionnaire was then sent to each sponsoring company to fill out, evaluating the actions they took to hire participants. TransUnion self-reported that they interviewed 3

Table 1: Sponsors who sent representatives to the hackathon

Company	Business	Hiring is a "main goal"?
CDK Global Inc.	Integrated IT solutions	yes
Xpring	Cryptocurrency	yes
Hathway	Digital branding and marketing	yes
Stellar Exploration	Aerospace	no
TransUnion	Consumer credit reports	yes

Table 2: Competence and interviews self-reported by sponsoring companies

Company	What percent of hackers had required competence to work at your company?	How many did you interview?
Ripple	80%	n/a
Hathway	50%	n/a
Stellar Exploration	30%	11
TransUnion	25%	3

Figure 3: Team Remit hours before demoing their project on the main stage

hackers, and Stellar Exploration self-reported that they interviewed 11 hackers.

When asked what percentage of participants they thought had the required competence to work at their respective companies, TransUnion stated 25%, Stellar Exploration stated 30%, Hathway stated 50%, while a representative at Ripple stated 80% of participants. One representative from Stellar Exploration commented, "the number above is really just based on resumes. Maybe after seeing the final results the percentage could go higher." All four companies stated that they would recommend the hiring of at least one participant to their companies.

3 REMIT: FROM BUILDING BLOCKS TO BOARD OF DIRECTORS

In this section we focus on one of the winning teams of SLO Hacks 2020 and ask some questions in an short interview setting.

The first place winners were four Cal Poly sophomores, Sullivan Xiong, Dandy Vo, Kenny Lau, and Kaung Myat Aung, who created Remit, a peer-to-peer payment app that uses blockchain technology to allow users around the world to send and receive money via text message, without the need for data or WiFi.

Remit was submitted under the "Financial Technology" vertical, and took home both 1st place "Overall Hack" and "Best Use of XRP or Interledger". The team wanted to make a global impact through the use of SMS, as their application could be accessed by approximately 80% of the world who own phones that can access SMS but may not have internet access. As one of the members put it: "This means we're not bounded by operating systems and phone models, and we're borderless because phone numbers can use any country code – this means our application can affect the world on a global scale."

Vo thinks that building a high-potency project at a hackathon is more incentivized as opposed to building it himself, without the team and resources that SLO Hacks provides.

Lau stated the team has plans to redesign the project, and turn it into an app that will become the go-to payment system for online shopping, going out to eat, and sending money to friends.

Team Remit demonstrated their design over a conference call with blockchain unicorn Xpring's board of directors on March 27th, where both parties went into initial talks about funding and investment options.

While Xiong indicated great interest in being an employee at Xpring, he is actively reconstructing the app, on all aspects including the SMSBot, MongoDB database, Xpring Protocol, Interledger Protocol, and Firebase database in an effort to finalize the details of the system architecture.

This experience is consistent with prior SLO Hacks events. At many hackathon events, companies offer interviews to the winning teams and the winners of their individual categories. In this particular case, the company has expressed interest in investing in a startup involving the winning team.

4 CONCLUSION

Feedback from sponsors and hackers were overall positive for this event. A representative from Xpring commented, "Great hackathon! We definitely got a lot of value and solid dev feedback that we'll

take action on. The students were an amazing group of hackers. The organizers were incredibly helpful."

Some criticism was attributed to technical difficulties, for example that it was hard to hear the speaker on stage from the back of the hall, and the intermittent WiFi connection in the beginning of the hackathon.

In a mutually beneficial relationship, corporate sponsors can utilize hackathons as a platform to outsource work, crowdsource modern production, and enhance their reputation, while participants can showcase their technical competency and product vision conveniently in front of an audience that is ready to fund and invest in their prototypes.

Although this case study demonstrates the eagerness of both hackathon participants to pursue internships and full-time positions with sponsoring companies, and that of sponsoring companies to interview and hire hackathon participants, it should be noted that these observations and insights were drawn from a singular hackathon. To test the consistency of these results, we would like to repeat these surveys in future events, or run similar studies on multiple, various hackathons forming a longitudinal study across diverse geographical areas.

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