Public Interest Technology University Network (PIT-UN) Challenge Grant

Stanford Cardinal Service PIT Career Pipeline Expansion Project

Year 2 Challenge Grant Report: Grant Number SPO_198243_PIT-UN

Link to Estimated Expense Report

July 2022

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1) Summary of key results

We are pleased to provide a summary of the results from our Year 2 Challenge Grant. These include:

- Creating an overall strategy to continue developing Public Interest Technology career pipelines, with a focus on developing a portfolio of PIT private sector employment opportunities.
- Partnering with our computer science department's corporate affiliate program, the Computer Forum, to jointly introduce both PIT career information and PIT organizations at information sessions and multiple recruiting events. This partnership will continue beyond the time frame associated with the grant.
- Continuing to provide a weekly PIT Careers Newsletter and expanding the readership to 750 subscribers.
- Publishing two comprehensive student guides:
    - The *Guide to PIT at Stanford*, featuring Stanford PIT-related courses, research centers, student organizations, and faculty
    - The draft *Guide to PIT Careers in the Private and GovTech Sectors*, profiling selected tech companies and highlighting PIT-related departments and positions within those companies
- Partnering with New York University, Pepperdine University's School of Public Policy, and University of Washington's Information School to host a virtual, national PIT career fair October 14-15, 2021.
- Partnering with Pepperdine University's School of Public Policy and University of Washington's Information School to host a virtual, national PIT career fair May 12, 2022.
- Identifying a unique opportunity to work with LinkedIn to develop a PIT taxonomy to better connect PIT job seekers with relevant career opportunities through LinkedIn's matching algorithms. This in-process project will conclude in summer 2022.
- Hosting a PIT Internship event featuring students who had secured and completed PIT internships in prior summers and 12 organizations offering PIT internships for the upcoming summer.
- Working with the McCoy Center; Ethics, Society, and Technology Hub to host two PIT ethics workshops to prepare students for ethical considerations when working in PIT.
- Adding an ongoing Public Interest Technology position to the Haas Center's Issue Area Coordinator (IAC) program.

- Continuing to identify, promote, and participate in courses and programs that prepare students for summer internships, capstone projects, and jobs.
- Offered PIT fellowship opportunities for graduating students: twelve in 2021 and nine in 2022.

2) Project Objectives

Our primary objective has been to expand on the work started as part of our Year 1 Challenge Grant to prepare and provide meaningful career opportunities for students focused on using technology to benefit policy and forge solutions to pressing social and environmental issues. PIT career options have historically been concentrated in the public sector—namely nonprofits, NGOs, and government agencies—and our second phase of work supplements these more traditional options with opportunities in the private sector. The project focuses on building private sector PIT career pipelines by curating opportunities to use technology for public benefit, preparing students via experiential education, and leveraging Stanford's Silicon Valley relationships along with relationships cultivated by project partners University of Washington and Pepperdine University. Specific proposed objectives and results are detailed below.

Objective 1: Jointly develop and highlight PIT career pathways into tech companies and GovTech enterprises by leveraging each university's strengths and connections, building on existing nonprofit and government agency pipelines.

Planned Activities

- Expand and share relationships with technology and GovTech companies in Silicon Valley, the Pacific Northwest, and Southern California through partnership with the University of Washington and Pepperdine University.
- Leverage alumni connections, career services specialists, and university affiliate programs to identify company divisions and GovTech enterprises focused on using technology for public benefit.
- Understand required academic and practical preparation for PIT positions and enhance opportunities for students to meet these requirements.
- Partner with Stanford's Computer Forum to make industry connections and to invite PIT organizations to Stanford's largest annual tech job fair to engage directly with students.
- Work with the University of Washington and Pepperdine University to organize a PIT virtual career fair and tag PIT job opportunities with relevant keywords in university career platforms.

Results

Our team of student assistants from Stanford, Pepperdine's School of Public Policy and University of Washington's ischool started by researching and building lists of alumni in tech, and specifically in private

sector tech and govtech enterprises. As a second step, they contacted alumni to set up interviews to gather more information about the PIT roles in the alumni's company or department.

At the same time, we leveraged our grant partners to create multiple opportunities for students to engage with PIT employers. While not included in our proposal, we had the opportunity to work with New York University on the A Better Tech initiative, which included a PIT-UN-wide job fair as well as an online conference and hackathon.

- *Stanford Computer Forum Fall Recruiting Fair*. This virtual event was held October 6, 2021; the Haas PIT Initiative hosted a public interest technology "booth" offering PIT career advising and conversations with four 4 PIT community partners (City Innovate, San Jose Mayor's Office of Tech and Innovation, Recidiviz, StreetCode Academy).

- *A Better Tech.* This PIT-UN-wide career fair was held October 14-15 and included 37 Employers and 200 participating students. Stanford was one of four universities recruiting employers and promoting the event to students. Events also included a full-day conference and hackathon.

- *Stanford Computer Forum Winter Recruiting Fair*. The Haas PIT Initiative offered PIT career chats and hosted four PIT Community Partners (SIRUM, Tarjimly, City of San Jose Office of Digital Privacy, City Innovate)

- *Stanford Computer Forum Info Session on PIT Careers,* January 13, 2022. With Stanford's Computer Forum, we offered an info session on PIT careers which featured alumna Priya Chatwani and highlighted PIT summer fellowships and post-bac fellowships. 40 students attended.

- *Joint West Coast PIT Career Fair*. The Haas PIT Initiative hosted a virtual PIT career fair on May 12 in partnership with Pepperdine University and the University of Washington that was open to both current students and recent alumni as well as students from other universities. We engaged All Tech is Human to help with outreach to employers and students, and they were a terrific partner. The event featured 35 employers representing tech nonprofits, government, social enterprises and for-profit PIT roles and had 222 student registrants.

Lessons Learned

After multiple attempts to work within and with Handshake, we determined that there was no way to tag PIT employers or positions in Handshake except at the individual university level, due to limitations in Handshake's technology. We pivoted to reaching out to LinkedIn and created a unique opportunity to work with LinkedIn to develop a PIT taxonomy to better connect PIT job seekers with relevant career opportunities through LinkedIn's matching algorithms. This in-process project will conclude in summer 2022; a draft is available here.

Attempts to reach tech companies to talk about PIT roles and PIT-specific recruiting also proved challenging. Through Stanford's Computer Forum, we emailed all corporate affiliates to request discussions about their tech recruiting practices and plans to recruit for PIT-specific positions. Even after a follow up email, we received no responses. Similarly, our student assistant team had difficulty securing interviews with alumni holding PIT roles in private sector companies. They eventually expanded their research and contacts to non-alumni, which also resulted in very few responses.

Accordingly, we have identified two primary barriers to influencing corporate tech PIT recruiting. The first is timing. With continued pandemic-related disruptions impacting academic institutions as well as hiring targets and recruiting processes at companies, we believe that recruiters were too uncertain and/or overwhelmed to discuss PIT-specific recruiting. In addition, Stanford career fairs in 2021-2022 continued in a virtual-only format, with attendance of both students and employers down significantly from pre-pandemic levels.

Second, we have come to believe that any change in recruiting practices will only occur as a result of student demand or new executive priorities or both. The recruiters themselves do not have the requisite incentives to change their modus operandi. For our part, we pivoted to drafting a Guide to PIT Career Pathways in the Private & GovTech Sectors that we hope will begin the process of educating and influencing students. Executive-level influence is a strategy that we believe will require the collective effort of PIT-UN members and funders.

Objective 2: Explore jointly offering new PIT postgraduate fellowships in technology and GovTech companies, including opportunities for students who may not identify as technologists.

Planned Activities

- Share best practices for PIT fellowships, including placement partner development, recruiting, selection, cohort management, and pre-service and in-service professional development.
- Jointly approach potential placement partners in the three geographic regions.

Results

At the June 11, 2021 meeting of the three grantees (Stanford, Pepperdine and University of Washington) Stanford presented its PIT fellowship programs and shared best practices with the other universities. While very interested in the Stanford approach, neither of the other universities felt equipped to offer similar opportunities.

Stanford continued to focus on offering an expanded number of PIT placements as part of its post-baccalaureate fellowship programs. For 2021, these included the following 12 opportunities:

City Innovate: Civic Innovation Fellow/Associate Product Manager*; Civic Innovation Fellow/Associate Program Manager*
Edstruments: Software Development Fellow
Gift Card Bank: Technical Product Manager
Grow Progress: Engineering Fellow
Learn Fresh: Marketing and Management Coordinator
Noora Health: Noora Health Impact Fellow*
SIRUM: Operations and Community Partnerships Fellow; Special Projects and Policy Fellow; Strategic Partnerships Fellow
Tech Matters: Aselo Fellow, Associate Product Manager; Terraso Fellow, Associate Product Manager

Of the 12 placements offered, we were able to fill only three PIT roles; they are noted above with asterisks. Several opportunities were unfilled because the organizations were unable to take a fellow due to continued

COVID issues. Others fell through because of the comparably low pay offered for technical positions.

Two additional new graduates were placed in PIT roles through our other fellowship programs. Nik Marda, one of our three 2021 John Gardner Public Service Fellows, was placed in the White House Office of Science and Technology Policy, working on AI policy. Additionally, one of our 2021 Tom Ford Fellows in Philanthropy, César Arévalo, was placed with the Technology in the Public Interest Team at the MacArthur Foundation.

For 2022, the nine PIT-related Community Impact Fellowship offerings were as follows:

City Innovate: City Innovation Fellow: Product and UX
City of San Jose; Chief Innovation Office: Equity Data Analyst (2)*
City of San Jose Mayor's Office of Technology & Innovation: Technology & Innovation Policy Advisor
City of San Jose; Public Library: Digital Equity Impact Fellow
Community Connect Labs: Policy Research & Business Development Support Associate
SIRUM: Special Projects Fellow*
Tarjimly: Full-Stack Engineer
Team4Tech: Program Associate; Growth Associate

Of these, we filled three of the PIT roles offered, noted above with asterisks.

Lessons Learned

Our main lesson learned is that we are unable to fill PIT roles when the partnering organizations are offering lower salaries typical of nonprofits. Our minimum Community Impact Fellowship salaries were $39K in 2021 and $42K in 2022. While we were able to place students in most nonprofit positions in this pay range, we were largely unable to find students that were both qualified for technical positions in the PIT placement organizations and willing to accept a lower salary. This informed our decision to turn our attention to helping students find PIT roles in for-profit corporations.

Objective 3: Continue to provide and support Stanford's PIT-focused fellowship opportunities focusing on private sector placements, offering at least 10 new internships for 2021-22

Planned Activities

- Review 2020 summer placement evaluations and incorporate feedback.
- Reach out to alumni and professional associations to expand internship opportunities by matching students with impactful field leaders.
- Work with faculty and staff and student organizations to identify organizations of interest to students and promote internship opportunities, focusing on students traditionally underrepresented in STEM fields.
- Encourage students enrolled in PIT-related courses to apply for internships; steward students through the application process and offer prep workshops on ethical and effective application of PIT.

Results

On January 10, 2022, the Haas PIT Initiative produced a PIT Internship event featuring four students who completed PIT internships in prior summers and 12 organizations offering PIT internships for this summer. 64 students attended and took advantage of the opportunity to speak with prospective employers including Autodesk Foundation, Benetech, Change Research, Coding It Forward, CS+Social Good, Edily, FastForward, Kiva, Princeton PIT Fellowship. Public Interest Tech Fellowship, Shultz Energy Fellowship, Stanford In Government, TechCongress, and the TomKat Center.

In total, 83 students have received fellowships for PIT internships since the start of the Haas PIT Initiative, working with 44 different organizations. A full list can be found here. Seven students received Public Interest Technology fellowships directly funded through our Year 1 PIT-UN grant. As part of our work, we reviewed feedback from those students and employers to enhance our management of future fellowships. These internships and their results include:

- Aveti Learning: Develops low-cost/high-touch technology solutions that help students in rural India learn without the need for continuous electricity and the Internet
    - Helped scale Aveti's digital platform by redesigning backend system architecture, streamlining the infrastructure provisioning and configuration process, and writing APIs to implement user and course management functionality.
- CareerVillage.org: Crowdsources career advice for youth at massive scale
    - Worked on full-stack web development on the CareerVillage website, using the Django framework and React to create a user feedback system.
- JustFix: Creates free tools in support of New York City's housing movement
    - Designed and coded a "new feature" widget to highlight functionality updates; leveraged the Equity Centered Community Design methodology to conduct user research and design an effective solution.
- Raheem: Provides a nationwide network of mobile crisis teams, health and social services, and abolitionist organizations to respond to crises with care
    - Created a widget to report police from any website; expanded a city page dashboard through database and created a map specifying each report, color-coded by encounter type.
- Recidiviz: Drives better criminal justice outcomes through data and associated tools
    - Built infrastructure for more efficient data management in one of Recidiviz's partner states by implementing SQL preprocessing to clean data coming into the ingestion pipeline.
- TeachAids: Designs, produces, and distributes lifesaving health education

    - Developed a technical framework to automate the move of thousands of videos and associated metadata to the TeachAids Symptoms Story Wall; contributed to the CoviDB project, a community-built, expert-curated platform that organizes COVID-19 resources.

- Tarjimly: Improves the lives of refugees by eliminating language barriers
    - Assisted in launching Tarjimly Cares, a corporate social responsibility initiative to recruit volunteer translators and connect to refugees, immigrants, and humanitarians

We also worked with the McCoy Center; Ethics, Society, and Technology Hub to host two spring quarter 2022 workshops preparing students for ethical considerations when working in PIT:

- Workshop 1: *Defining Your Own Values and Principles Related to Work* taught by Jack Fuchs, Stanford Technology Ventures Program Director of Principled Entrepreneurship and Adjunct Lecturer in Management Science & Engineering
- Workshop 2: *Choosing a Tech/PIT Employer Aligned with Your Values* taught by Sarah Miller and Linda Eggert of Principia Advisory, a leading advisor on organizational ethics.

Lessons learned

While Stanford's public service fellowship funding guidelines do not fund students working in tech corporations, we were able to provide some private sector placements in corporate foundations and social enterprises. In order to realize our vision of more private sector PIT fellowship opportunities, tech companies would need to change their internship recruiting practices to recruit specifically for PIT roles; they do not currently offer these positions.

Objective 4: Further expand Stanford's portfolio of PIT capstones and course projects to provide meaningful experiential learning options.

Planned Activities

- Expand engineering engagement to provide PIT capstone projects
- Expand opportunities within targeted departments beyond engineering
- Support and promote experiential learning opportunities through the Stanford PIT Lab
- Identify partners, monitor an expanded set of PIT student capstone projects.

Results

Year 2 Challenge Grant work continued development of meaningful and substantial opportunities to gain exposure to and qualifications for careers in PIT. This includes identifying, promoting, and participating in courses, with a focus on community engagement and capstone opportunities.

The *Guide to PIT at Stanford* provides a listing of all PIT and PIT-adjacent courses offered through each of Stanford's seven schools, organized by thematic area. Work is underway to tag each of these courses in the online Stanford course catalog, allowing easy identification of PIT options. As courses are continually developed and/or replaced, the database is updated on an ongoing basis. Many are cross-listed in multiple departments; as an example, *Ethics, Public Policy, and Technological Change* is cross-listed in Communication, Computer Science, Ethics in Society, Philosophy, Political Science, and Public Policy. A full listing of courses offered from 2020 through 2022 is available here.

Capstone opportunities. Cardinal Capstones are service-based educational experiences that provide opportunities for students to integrate, synthesize, and apply the aggregate knowledge of their undergraduate program through engagement with community partners. We have developed a guide for faculty interested in providing Cardinal Capstone options within their department and the Directors of Community Engaged Learning work closely with them to develop syllabi. Course grants are available for faculty to support the community engaged elements of their capstones. Examples of PIT-based Cardinal Capstones supported include:

- Streamlining the process to disseminate free curricula and learning tools about sexual health, abortion, and contraception to close the gap in abortion education for medical students and professionals. Partner: Innovating Education in Reproductive Health
- Designing school data reporting to offer near- and long-range recommendations to decrease carbon emitting transportation options. Partner: MakeKnowledge, a nonprofit focused on creating ecosystems of opportunity in education
- Designing inclusive and accessible tools and platforms to improve reach and productivity for a nonprofit that engages community members, developers, and city leaders to envision and create sustainable, equitable, and vibrant places for Silicon Valley residents. Partner: Catalyze SV
- Working with the Stanford Computational Policy Lab (SCPL) to determine whether prosecution of cases involving marijuana possession and other charges exhibit racial disparities related to filed charges and sentencing. Partner: Marion County Prosecutor's Office

Course opportunities. We funded multiple PIT-focused courses through our Challenge Grant, working with Stanford's PIT Lab and selected departments to ensure that student projects were scoped and defined in accordance with Stanford's Principles of Ethical and Effective Service. Examples of these projects include:

- Computer Science 184 (Bridging Policy and Technology Through Design): Students addressed inequities in educational outcomes across states by analyzing data to investigate correlations between school district spending patterns and student performance.
- Communications/Journalism 177I (Investigative Watchdog Reporting): A team of students worked with Stanford's Big Local News program to review case reports and body-worn camera footage to analyze use of force by the San Jose Police Department. Funding was also used to to engage Jeremy Singer-Vine, an award-winning data journalist, to work with students to test and vet their methodology/Python coding used to identify court cases where the constitutional doctrine Deliberate Indifference was invoked. This project examined how the use of this doctrine can shield prison officials from liability in cases where inmates are injured or die as a result of prison actions.

- Urban Studies 164 (Sustainable Cities): Using ArcGIS and statistical analysis, students analyzed consolidated 2021 commuter data for the County of Santa Clara to develop maps defining more sustainable employee commute options.

Continued experiential learning. We selected a project started as part of a community engaged learning course for continued support over the summer. The student is researching the relationship between local tree canopies and traffic safety, specifically automobile-pedestrian crashes, by analyzing detailed data from local law enforcement incident reports and automating the process to map this data by location, time of day, and daylight conditions.

Partnership Development. The Haas Center's Issue Area Coordinator (IAC) program selects highly committed students to help build partnerships among Stanford students, faculty, and Bay Area community leaders. Existing positions included IACs in the areas of Affordability, Civic Engagement, Education, Environmental Sustainability, and Health. We have added an ongoing position focused on Public Interest Technology.

Future PIT academic options. Stanford's commitment to PIT education is reflected in the new program in Data Science & Social Systems being introduced in autumn 2022. This interdisciplinary undergraduate major will equip the next generation of leaders to work at the intersection of statistics, computation, and the social sciences on important social problems such as poverty and inequality, polarization, criminal justice, and urban development. Students will complete core coursework in computer science, statistics, and the social sciences; a practicum in which they apply data science skills to a well-defined problem; and a specialization in a particular domain. The new major will engage faculty from across the university and support students to learn and apply technical skills to practical, social problems that affect our economy, society, and daily life. It offers an immediate opportunity to advance the work started through our PIT-UN grant.

Lessons Learned

The process of identifying and developing suitable PIT projects with community partners requires a significant investment of time and resources. While faculty clearly see the benefits of community engagement within their courses, interviews and course design workshops highlight a justifiable concern that they lack the capacity to reconfigure their curricula to provide a critical mass of these opportunities in the near term. Going forward, it will be necessary to target specific departments and offer assistance in developing partnerships for PIT projects, including funding via course grants.

Stanford's universal capstone requirement applies to the classes of 2025 and beyond. The 2021-22 academic year therefore marked a time of transition and design for the many departments that do not yet require a senior capstone experience. These departments are in the nascent stages of developing their offerings and while many offer excellent opportunities for PIT-related projects in the future, most are not yet ready to commit to specific formats and approaches. Our work in this area will continue far beyond the timeframe of the 2021 grant and we are working with the new Data Science and Social Systems major to design their capstone options.

Finally, Stanford's course catalog is not static and courses are added and dropped on an ongoing basis. Feedback has shown that the listing of PIT-related courses in the *Guide to PIT at Stanford* is of great value to students, but it must be kept up to date to be useful. We are developing a set of criteria to easily identify a class as PIT or PIT-adjacent and implementing a tagging system so that these courses are searchable within the online catalog.