



## **NYU Institute for Public Interest Technology:** A Model for Supporting the Next Generation of Public Technology Scholars

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### **Introduction**

For public interest technology (PIT) to truly serve the needs of the public, it must welcome and support scholars from groups historically underrepresented in STEM. To that end, the NYU Alliance for Public Interest Technology created the inaugural Institute for Public Interest Technology (IPIT).

IPIT was conceptualized in January of 2021 and delivered in June 2021. It teaches digital methods and a critical curriculum and was specifically meant to support people of color, women and gender non-conforming individuals, and queer people—all groups that have been excluded from the science, technology, engineering and math (STEM) workforce. Black workers, for example, represent [only 9% of STEM workers](#) in the U.S. despite being 11% of the workforce; Hispanic workers are 16% of the general workforce but only 7% of STEM workers. Meanwhile, women make up [only 28% of the workforce](#) in STEM.

Our two-week virtual program brought together and supported 15 early and mid-career scholars. The first week focused on teaching technical skills, including an introduction to Python. The second week featured lectures and workshops with senior scholars on socioethical questions related to public interest technology.

The institute supported participants in a holistic manner: by offering the technical training and tools to understand PIT; by teaching a sophisticated critical curriculum; by helping participants build a network of contacts and collaborators for future projects; and by providing project planning support and hosting discussions on the experience of scholars of color in academia. This white paper summarizes our efforts and lessons learned to provide a basic model for seeding similar institutes at universities across the country.

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### **Method**

#### *Partnerships and Recruitment*

IPIT was designed to serve underrepresented scholars by teaching them technical skills and connecting them with interdisciplinary experts who could speak to sociotechnical topics and also model success in the academy. To do so, the Alliance for Public Interest Technology partnered with the NYU Center for Critical Race and Digital Studies, which produces cutting-edge research that illuminates the ways that race, ethnicity, and identity shape and are shaped by digital technologies.

Other institute partners were UCLA's Center for Critical Internet Inquiry, the University of Washington's Tech Policy Lab, and PIT-UN. Each of these partners helped promote IPIT to their networks for the purposes of recruitment. The PIs also asked relevant personal contacts to assist in publicizing and sharing the program.

As a result of these efforts, the institute received 49 applicants, 80% of which were from groups underrepresented in PIT and the academy. Prospective [applicants](#) were required to submit a brief description of the project they would work on during the institute, write a statement of interest, and describe their level of comfort with various digital methods, broadly defined.

Ultimately, we selected 15 scholars for the program based on academic excellence, strength of the project, and a demonstration of a basic level of competence with technology. Participants included a combination of assistant professors, postdoctoral scholars, and doctoral candidates. One participant was a policy expert interested in transitioning into academia; his inclusion brought a different and valuable perspective to discussions and we intend to include more policy experts and non-academics in future cohorts. We divided the participants into three cohorts of five, depending on the stage of their project. Projects ranged from deepfake research to Twitter sentiment analysis to studies on race and health.

Two applicants deemed too advanced for the institute were offered positions as teaching assistants during the first week, which covered technical skills, with the option of attending the second week of talks and mentorship.

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### *Staff*

Recommended roles for future IPIT are as follows: 1 grants administrator, 1 program coordinator, 1 technical instructor, 1-2 principal investigators, and 1-3 teaching assistants.

The program administrator and PIs were responsible for developing the syllabus, identifying experts, and scheduling them for talks. The technical instructor was responsible for developing and delivering the week-long curriculum, and the TAs assisted before and during the sessions. All of these are part-time roles that ramped up leading to the delivery of the institute in late June.

### *Curriculum Design*

IPIT was created using principles of inclusive design. A community-driven, bottom-up method of determining curriculum was crucial to supporting the specific needs of scholars accepted to the program. For example, the application asked participants which programming language they were most interested in learning. The answers informed the decision to focus on teaching Python.

Another major decision hinged on the technical level of the workshop and whether it should commence at the beginner, intermediate, or advanced level. Though we initially considered running two separate tracks for beginners and advanced participants, the needs of this particular cohort ultimately shaped the institute so that all participants started at the beginner level and worked their way to intermediate. IPIT was therefore conceptualized as an on-ramp to more advanced work.

The institute began with a mini-lecture on the broad definition of public interest technology. The first week consisted of a technical curriculum including Python basics, gathering and cleaning data, visualizing API data, a machine learning demo, and an API mini-project. Lessons were taken from [Software Carpentry](#), a volunteer project dedicated to teaching basic lab skills, and taught primarily by an expert from the NYU digital humanities community. We used Gitpod for an instructional environment, Google Collab for coding, and put the code up on GitHub. A combination of lecture and hands-on exercises were found to be optimal for pedagogical purposes.

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The second week focused on critical approaches to public interest technology, which many applicants had expressed great interest in. When designing the curriculum for the talks and workshopping sessions, we selected a blend of scholars working in academia, people with experience working within government, and people working on social issues and who collaborate with activists and community groups. All the senior scholars had experience building bridges between different communities and were comfortable talking to different groups with different levels of prior knowledge. All but three of these scholars were members of BIPOC communities.

Key topics for the readings and curriculum included race, gender, ability, fairness, the basics of technology, and other intersections of social issues and technology. Public interest technology is an interdisciplinary field—accordingly, curriculum design drew on ideas developed at the [NeurIPS](#) and [ACM FAccT](#) conferences, as well as from contemporary work in science and technology studies.

The talks were as follows:

1. Hashtag Activism: A discussion with [Sarah Jackson](#)
2. Open Source Work as Part of a Tenure Portfolio with [Jaime Oliver La Rosa](#)
3. Q&A with [Safiya Noble](#)
4. Auditing with [Cathy O’Neil](#)
5. Workshopping Projects with [Ryan Calo](#)
6. Approaching Anti-Racist Technology Scholarship & Practice as Public Interest Technology with [Charlton McIlwain](#)
7. Informal Conversation & Workshopping Projects with [Sasha Costanza-Chock](#)
8. Critical Race Scholarship on Algorithmic and Computational Cultures with [Ezekiel Dixon-Román](#)
9. Building a More Digital U.S. Government with [Cori Zarek](#)
10. Normativity, Performativity, and Design: Thinking About Working Within/Against/Beyond Digital Control Systems with [Kimon Keramidas](#)

Expert sessions during the second week consisted of a combination of formal presentations related to a specific topic and informal mentoring for the purposes of professional development. For instance, Safiya Noble hosted a session about the experiences of people of color in academia.



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Participants were thus able to make personal connections, follow up with the senior scholars, and learn about academia in a more holistic manner.

### *Logistics and Cohort-Building*

Due to travel restrictions and COVID-19, the inaugural IPIT was held virtually on Zoom and Slack. Participants were provided with a [code of conduct](#), syllabus, and a [calendar](#) with Zoom links to each session. Each day, participants met from 9 a.m.-11:15 a.m. Eastern Daylight Time, then again from 1 p.m.-3:15 p.m. EDT.

Throughout the two weeks, we hosted four lunchtime socials during the break between sessions. We paired participants based on research interests and set up virtual rooms for them to discuss their work (while ordering food using a \$200 GrubHub gift card provided by IPIT). These lunchtime socials were optional but every participant chose to attend each session.

The first week featured technical lessons every morning and afternoon. A week before the institute began, a PI and TA held office hours so participants could drop in and receive any technical help necessary for installing software or troubleshooting. This provided an opportunity for participants to meet each other and also helped the instructors assess participants' level of technical skill.

Early assessment proved to be useful, as it can be challenging to teach technical skills to those with varying degrees of familiarity. This situation was ameliorated by the deploying teaching assistants during the first week. We quickly identified the participants that required additional support, then assigned TAs to work with these participants individually and check in regularly to ensure that they were not falling behind.

During each of the sessions, a TA or PI took notes on the lecture and posted them in a Slack thread for future reference. The teaching assistants held office hours Monday through Thursday at 3:30 p.m. following the conclusion of the afternoon session and the first week culminated with a hands-on exercise: developing an API scraper and analyzing the data it gathered.

The second week consisted of a combination of lectures from scholars and opportunities to

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workshop participant projects. During these lectures, we set up concurrent opportunities for participants to join discussion rooms or virtual coworking sessions led by an instructor. These co-working sessions were part of the goal of teaching participants—especially doctoral students and those earlier in their careers—project planning skills and tools for time management and conducting academic research. On the final day, participants provided updates on their projects.

Over the course of the institute, the Slack room became an important space for socialization, tech support, and sharing resources. It served as the repository for troubleshooting and notes, as well as a space for participants to ask for reading suggestions or other resources from each other. Each time a book or paper came up in discussion, a participant posted the name and a link in a Slack channel called #readings, which turned into a useful reading list. After the conclusion of the institute, IPIT members used Slack to organize their own accountability groups. These include a group to practice Python; a group to check-in monthly and help each other through long-term projects; a reading group for critical approaches to PIT; and a group to discuss policy. Three virtual reunions over the next year will serve to maintain and strengthen connections.

### *Newsletter*

To continue the mission of the institute after June 2021, we created a monthly newsletter that will be sent to members of the PIT-UN and other STS communities for seven months. The newsletter includes links to recent developments in the world of public interest technology, with brief analysis, and highlights the work of junior and senior scholars working in this area.

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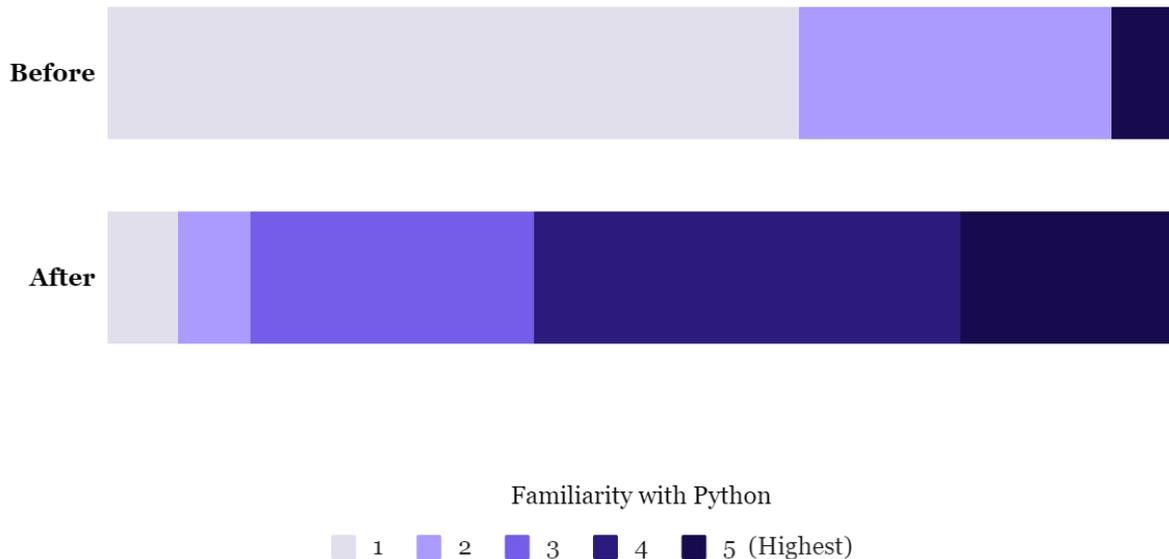
### Results

#### *Survey Results*

Institute participants filled out pre- and post-attendance surveys assessing their level of comfort with both technical skills and the literature around biases in tech. The results show that, on average, participants gained fluency across all skills. A selection of results are below:

Familiarity with Python before and after the institute, where 5 is the highest level of familiarity.

#### Python Basics

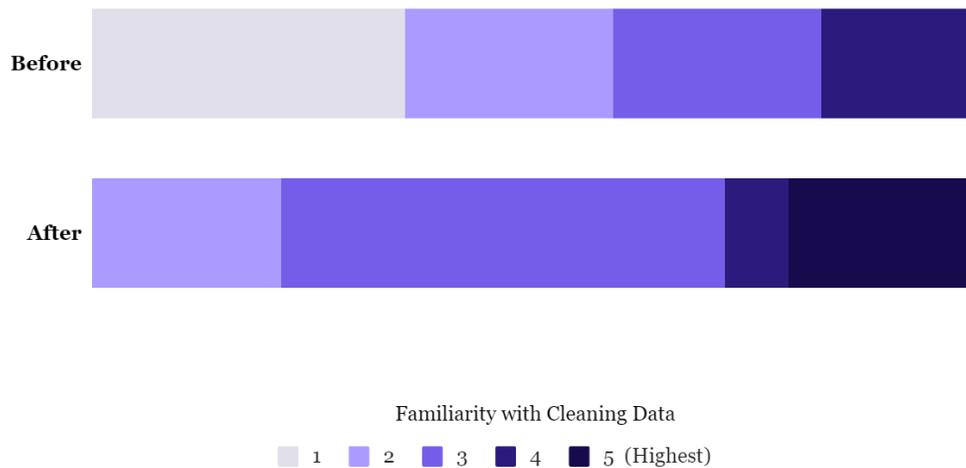




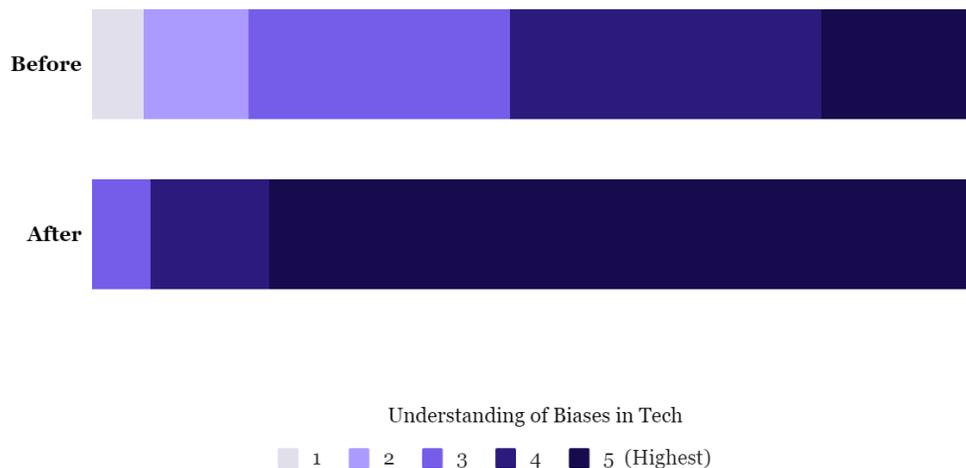
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### Cleaning Data



### Biases in Tech

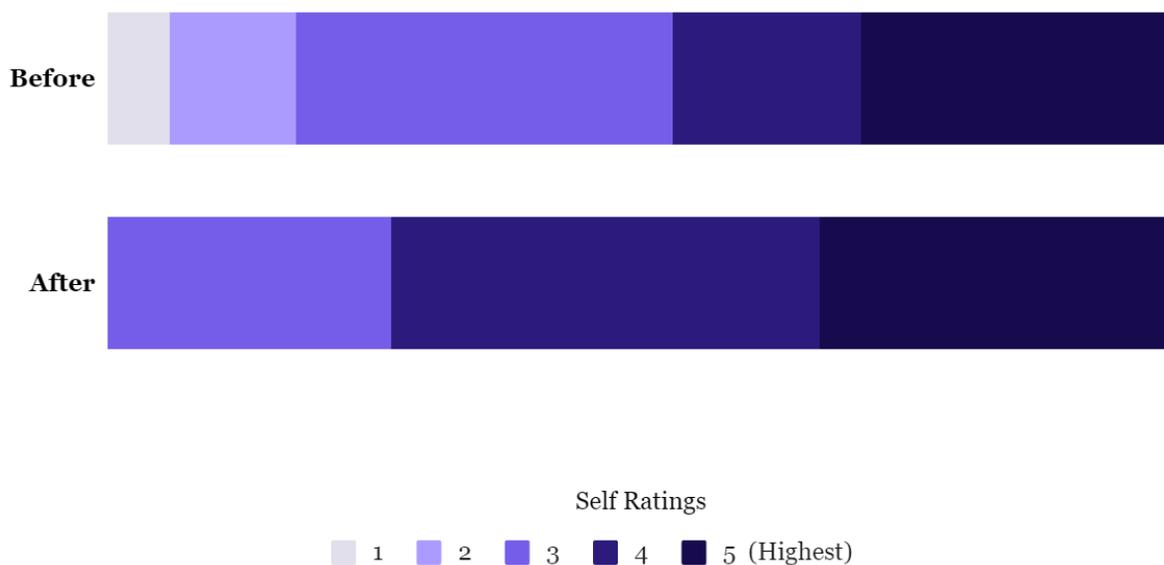


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The most important desired outcome for IPIT was that scholars feel more confident when engaging in public technology scholarship. Results from the pre-attendance and post-attendance survey show significant gains in this area.

### Capacity to Do Public Interest Technology Work



### *Participant Experiences*

Qualitative feedback also showed the value of the institute. One participant stated that IPIT helped them develop the timeline of their project. They pivoted to create a new research paper and wrote the first five pages. Others said that the institute helped them come up with new ideas for research projects, or pointed out specific new skills they had developed, such as how to query APIs.

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The technical training was the greatest boon for Devron Brown, a Capitol Hill policy expert with a background in AI and financial technology. Prior to the institute, Brown had no experience in coding. Over the course of the institute, Brown created a free app that pulls financial data; this is part of his ultimate goal of creating a Bloomberg Terminal-like product that is accessible to everyone. According to Brown, the technical training will be extremely helpful when working with lawmakers in the future. “I write laws, but I’ve never written an app,” he said. “Now I can use better metaphors because I understand what the actual implications are, and then I can bring my perspective to the technology now—which is something I don’t think I’ve ever been able to do before because why on Earth would someone that works in policy go build an app in the middle of their career?”

Alejandra Regla-Vargas, a doctoral candidate at the University of Pennsylvania, applied to the institute with a project that leverages Twitter data to examine how exposure to immigration raids affects user well-being. For her, the institute provided a higher-level overview of the skills necessary to complete the project and also helped expand her idea of what counts as public interest technology. Previously, Regla-Vargas believed that public interest technology focused primarily on algorithmic bias. She now realizes that it is also about creating safer online spaces and sees more of the intersection of public interest technology and race.

Project planning meetings helped Regla-Vargas come up with a rough deadline and plans for her independent research, she said. Through the lunchtime socials, she learned about Twitter resources that will help her collect more data. Regla-Vargas also praised a session featuring Cori Zarek, who has worked in government, for helping her think about non-academic jobs.

Both Regla-Vargas and Marie Plaisime, a postdoc at Harvard University, highlighted the importance of the career development sessions aimed specifically at scholars of color. “I think sometimes I’m very fearful about taking certain risks because I don’t have a template or because this is my first time doing things,” Regla-Vargas said. “Another part of it also is my identity being first-gen—there aren’t really role models or people that I can look to say, ‘this is the way they’ve done it.’” Working with academics of color, both senior scholars and others in the cohort, helped her feel more comfortable doing the work she wants to do.

For her part, Plaisime sharpened the focus of her project. Originally about racism and health



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tools, the project now looks specifically about how racism is incorporated into cardiovascular tools. For her, talks on how racism and power hierarchies work within technology were particularly useful. Like Regla-Vargas, she enjoyed hearing from scholars talk about their experiences as people of color in academia. “Also, it was really great to see other Black women [in this space] because there's so few,” Plaisime said. “It was super inspiring and really great to know that there’s a community and there’s the potential to start a greater community in the space and have folks in the room.”

### **Lessons Learned and Future Ideas**

The most common suggestion for future institutes, per participant feedback, was that they be held in-person. Though the virtual format made the institute accessible to those outside of New York City, it also created challenges when it came to group cohesion and pedagogy.

We believe that offering the program in person may help alleviate this main feedback provided by students. Many cited the need for more time working with Python or wanting a practice session incorporated as part of the daily lessons. These were components that, while considered, would be difficult to incorporate into a virtual classroom given the burnout that can result from spending hours on Zoom or other web conferencing services.

Ultimately, the most important considerations for future iterations of IPIT remain the principles of inclusive design and the breadth of the program. It is crucial to partner with scholars and organizations who can bring not only a rigorous academic and technical background but speak specifically about the concerns that early to mid-career underrepresented faculty and students may have.

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