

2020 Software Developer Diversity and Inclusion Workshop: Report

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This report summarizes the [2020 SDDI workshop](#).

Keynote Summary

Diversity, Differentiation and Divide, Biao Xiang

Professor Xiang introduced three modes through which things are organized: diversity, differentiation, and divide. **Diversity** is highly visible and celebrated. But fundamentally, people share the same ideology. **Differentiation/heterogeneity** is the heterogeneity hidden in the social structure but sustains certain power relations in the society, for example, working class Black people and hotel workers who wash sheets/dishes. **Divide** refers to ideology or political divide, for example, the cold war.

Professor Xiang discussed these three modes through two recent events. The first one is George Floyd's death. Professor Xiang pointed out that while people are discussing this event, people pay less attention to the people who killed him. The police officer and George Floyd used to be colleagues; they were the same niche in the society. In addition to race, the problem is also about class - people are less exposed to the working class; know less about black people's life reality. Related to this issue, professor Xiang also pointed out that people often use one image for Black people, but in fact they are very diverse, e.g., Black people in London vs. those in the U.S.

The other event is the current cold war between China and the U.S., a political divide between the two countries. After the previous cold war between Russia and the U.S., people used to believe that they will become similar to each other both ideologically and politically. But now, in 2020, we are facing a turning point. There are many facets beneath this issue, but one of them is that it is a result that the previous framework in which difference is accommodated no longer works. To U.S. elites, China's development in the past 30 years was tolerable - as long as the U.S. dominance is never challenged, diversity is acceptable. But diversity becomes a threat when the U.S.'s global dominance is challenged. Now the diversity becomes the divide.

Professor Xiang went on to explain the relationship between the three modes in history. During the cold war between Russia and the U.S, diversity is not celebrated. Multiculturalism is

opposed to the cold war's political recognition. In the 1960s, differentiation is decreasing - during the civil rights movement, the racial segregation is abandoned; welfare in Europe, Canada, and the US give rise to a solid working class and provide public health and public education. So the outlook of life becomes more common, to the extent that it is almost a forced homogenization. But ideologically, there is a divide between socialism and capitalism. It is a period of time with low diversity, declining differentiation, and high divide.

Small footnote on diversity: In the 1960s Europe, migrant workers' identities were just workers. But after the 1960s, their ethnic minority became more important. People asked "where are you from" rather than "do you drive a taxi legally during the night?"

From 1990 to 2020, we see increasing and celebrating diversity, which has become an important political issue. Due to migration into the metropolitan cities, we have a rapidly increasing differentiation. Because of neoliberalism, we have different types of job contracts, for example, outsourcing. In his opinion, global supply chain capitalism (commodity chains based on outsourcing) is capitalizing differentiation. For example, people from 2 castes from Southern India become main migrant IT workers in Australia. This cannot happen by chance, because these people need training and visa sponsorship. It is arranged according to certain political economies. We also have a low or declining divide in the past 30 years. During the cold war, people think history advanced through tension and antagonistic forces. After the cold war, the antagonistic forces disappear, so people believe that the divide should disappear. It is a period of time with high and celebrated diversity, increasing differentiation, and low divide.

Post 2020, diversity as a cause of diversity is being contested - death of the multiculturalism. In the coming years, there will be intensifying differentiation. People ask will COVID bring better welfare, more equitable society? In his opinion, it is unlikely - we still have very differentiated labours and social status. We also now have a new divide.

How should we face that?

Professor Xiang pointed out that It is not necessarily a bad thing; It can be an opportunity for us to rethink some fundamental problems. There are probably 3 things we could do:

- 1) Coasting: continue celebrating diversity, which needs courage today, especially in the U.S.
- 2) Paying attention to differentiation: Only a small group of people can enter Google, which is not how the entire society works. So we also need to think about differentiation in the high tech industry, for example, Indian migrant IT workers and gig workers.
- 3) Trying to redefine divide: prevent divide from becoming an ugly confrontation of the raw power.

What I learned from 6 years of building CodeNewbie, Saron Yitbarek

Saron Yitbarek's keynote took the audience on a journey of how she started code newbies community and lessons she learned along the way as many forms of being community builder, as a developer, as an entrepreneur, and as a human.

Saron started the talk on how she started her journey into software development by participating in a coding boot camp where she was able to immerse herself in a program for 6 months without an income and pay 11K to attend. Although she highlighted that her coding boot camp experience was a great opportunity for her to get introduced to the programming community and find support, these types of camps are not accessible to most people. She posited the question, "Where do you get your community if you don't have 11K to spend?" One answer to this question was the Code Newbies Twitter chat she created where people on their new programming journey could connect with peers on a similar process. In this Twitter chat newcomers to coding were able to find a community with a shared experience. She talked about her intention on making the Code Newbies community a welcoming and safe community by having 3 community rules for every Twitter chat: 1) be supportive, 2) be honest, and 3) be nice. Some highlightable outcome from the Twitter chat was the importance of having those rules and who it implicitly filtered out, the fact that there is a development community on Twitter that wants to help and newcomers just needed to ask, and finally the value newcomers found in drive-by mentorship although there was no expectation of a long-standing relationship.

As a community builder, she described her journey from the initial CodeNewbies Twitter chat to hosting podcasts to later hosting in-person conferences. In highlighting these experiences she described how from her podcast she learned that stories are everything. And although her podcast was mostly about the code, it was also about the stories of the developers themselves that really engaged the community (e.g., A person who transitioned careers from being a truck driver into a software development role). Another lesson she highlighted the podcast was that representation matters--they didn't call what they were doing 'diversity and inclusion' they just did it. Saron recalls inherently inviting people from a range of geographic regions, gender identities, and more simply because it was a true reflection of their values. The goal was to represent the different trajectories to becoming a developer. She also talked about the importance of consistency and how important it was to stay consistent with their podcast episodes and code campaigns such as #100days of code. This let the audience know they were always going to be a place they could find support.

As a developer, entrepreneur, and human she discussed the importance of building sustainable systems and connected that to how to start new ventures including conference organizing. Utilizing feedback as the gift that it is contributed gratefully to the evolution of Code Newbies. She closed this section of her keynote by openly talking about stigma around mental health, her personal journey through these ventures, and the relevance of describing mental health as a valid form of self care.

She left the audience with a final note about software developers and community builders not being that different. Their job is to do the same 4 tasks: understand, build, listen, and iterate. All four of these tasks are pertinent to being both a good software developer and a good community builder, but to be a *successful* one it's important to have the patience to iterate as the work is never quite done.

Talk Summary

Is 40 the new 60? How popular media portrays the employability of older software developers, Alexander Serebrenek

In their [recent IEEE Software paper](#), these researchers looked at how age was portrayed on popular media, specifically published on a blog platform or news website. They examined 24 articles, plus hacker news to see folks' responses to these articles. They found that:

- Employability was the major theme discussed.
- Discussions of aging and "mastering modern technologies" was common, but a controversial topic on HackerNews.
- There were suggestions of older developers needing to "appear young" to hide age
- When discussing strategies related to age discrimination, most of the discussed strategies were negative. If they're followed, older developers are less likely to be hired and retained.
- "old developers" are quite young, the most popular threshold is 40, while some articles put it even at 30

A Theory of Software Change, Ayushi Rastogi

Ayushi's research is working towards a process theory, which explains how a process changes over time. It's a description of how things are done, not how they should be done. This theory seeks to understand software changes, and does so by looking at collaborative, pull-based development on GitHub. They looked at both GitHub's official documentation, and software project documentation on GitHub. By doing so, they derived a theory that examines entities and relationships between those entities. Ayushi's actively gathering feedback on the theory now; [readers can comment on her spreadsheet](#).

How can we include the EU Accessibility Directive in our on-line teaching materials? Ita Richardson

These researchers are looking at the EU Accessibility Directive, and how it should be considered in a potential COVID tracker app that's developed as part of a course project. The directive is originally 152 pages, so the researchers reduced it to 21 questions, like "Are measures taken to ensure that collected accessibility information is private?" and "Has modes of operation and features of accessibility been included for use in input fields when collecting personal data i.e., programmatically determined?"

Equity Engineering: Impact & Opportunity. Dominique Wimmer

Talks about the Equity Engineering team within Google, which is "A comprehensive approach to building equitable products for underrepresented and future users." The pillars are to transform software development, centralize user experience research, center equity in design, and build equity fluency. The goals are to dismantle systemic bias, empower and drive access to the tech industry, and share findings with open source. They partner with the Chief Diversity Office and product teams.

Empathy, Opportunity and Inclusion in Accessible Design: a perspective from undergraduate CS education. Stephanie Ludi

Trying to solve the problem that most developers lack accessible design skills and that few instructors can teach it. If it's taught, it's typically in HCI, web development, or software engineering courses. The author ran a second year HCI course at Rochester Institute of Technology over four years, with a minimum of one week of lecture on accessibility. The findings were:

- There were short-term gains in knowledge about accessibility
- Some changes in attitude towards persons with disabilities
- Short-term gains and attitudes disappeared

Recommendations include making accessibility frequent, graded, and resourced. Most students don't know people with disabilities, and such people should not be relied on to educate their peers.

Predicting Developers' Negative Feelings about Code Review. Carolyn Egelman

[Examined how frequently](#) developers have negative experiences, what factors are associated, and what metrics can detect such experiences. Developed a notion of “pushback” -- the perception of unnecessary interpersonal conflict in a code review while a reviewer is blocking a change request. Researchers conducted interviews, collected metrics, and sent out surveys. Found that:

- Most Google developers satisfied with the code review process, but the majority have a negative experience at least once a quarter
- Quantitatively, three metrics combined together best predicted negative feelings: long reviewing time (time spent by reviewers), long shepherding time (time spent responding/fixing reviewer issues), and rounds of review.

Investigating Bias in Code Review using Medical Imaging and Eye-Tracking. Yu Huang

The talk begins with an overview of a variety of research projects at University of Michigan, seeking to:

- Understanding relationship between gender and decision to declare CS major
- Analyze users' problem-solving strategies in computational activities and the impact of human factors
- How do developers contribute to open source for social good?
- Investigating the cognitive processes in code writing

The rest of the talk describes their recent experiment putting developers in fMRI machines to understand how gender affects likelihood to accept or reject a pull request. No statistically significant difference was found in outcome, but differences in behavior did emerge.

Experiences Running a D&I Program at ASE 2019, Andrew Begel

Described running a D&I program, which included a Diversity and Inclusion Statement, a Code of Conduct, Travel Support, Childcare Assistance, a First-Timer's Lunch, Local College Student Visit, Ad hoc Affinity Group, Dinner Meetups, Women's Breakfast, D&I Lunch, and D&I Karaoke. Most activities worked well. However, the local college student visit was challenging, due to (a) transportation challenges and (b) students found it difficult to understand the talks. Adhoc dinner meetups didn't work for a lot of reasons, both due to the circumstances, and largely because ASE introverts didn't want to be group leaders to have dinner with strangers. Future attendees wanted increased travel funding for poor countries, live captioning for presentations, and childcare at the conference. Moving forward, a lot of this doesn't apply to remote conferences -- so how do we move forward there?

Conducting Covert x Overt Inclusion Research, Denae Ford

There are overt and covert diversity, equity, and inclusion studies. The former looks at underrepresented groups directly in a way that might benefit them, and the latter performs research that may help them indirectly. We should do both and [can adopt methods that support us when we do](#). These methods include:

- Asking questions that marginalized community cares about in a way that respects them as valued members of the computing community
- Member checking with same community to ensure findings are valid and are responsibly reported
- Return the findings to the community to support them in an a way that *they* deem sufficient

Agile Inclusive Accelerator: a research and education program for an equitable tech future, Rafael Prikladnicki

Describes the Agile Inclusive Accelerator, which develops basic programming skills of teenagers from high school in a situation of social vulnerability, using an agile mindset, values, principles, and practices. Operating since 2017, it's guiding principles are being instrumental, preparing for our century, and embracing diversity. Overall, 127 students have participated in the program, with the number of women increasing as time goes on. Challenges in include improving the balance between professional placement and project delivery.

Hidden Figures: Different Roles and Success Pathways in Open Source, Anita Sarma

Surveyed the Apache Software Foundation to understand the state of the community. They then interviewed 17 successful OSS contributors, discussing their career journeys. Some followed the classic coding "joining script", others went from coding to non-coding, and others did entirely non-coding careers. The latter represent non-traditional, "hidden figures".

Breakout Sessions

We had 9 breakout themes, as well as a plenary virtual "wine and cheese"/"tea" session at the end. These themes were proposed by the participants and attendees self selected to participate in the breakouts. The following show the themes of the breakout sessions with links to the notes for each breakout session.

Best Practices

Breakout theme: Best Practices (Lead: Denae)

2pm-3:20pm Pacific time

Participants:

- Denae Ford (lead)
- Bianca Trinkenreich
- Amber Horvath
- Jocelyn Simmonds
- Kate Stewart
- Alexander Serebrenik
- Rafael Maiani de Mello
- Emerson Murphy-Hill
- Mariam Guizani
- Anita Sarma
- Kelly Blincoe
- Sayma Sultana
- Sanuri Gunawardena
- Rafael Prikładnicki
- Raula Gaikovina Kula (Au Gai)
- Margaret-Anne Storey
- Peter Devine

Topics to discuss:

Continuing the conversation from the **how-to**

- Publishing something similar to the [handbook that Morgan Klaus has](#) for SE research specifically
 - Perhaps even bringing in expertise from other intersectional areas... cc//Finda Ogburu's race in hci paper.
 - Benefits of having an online website is that we can edit as we go
 - But updating the website should not become a chore
 - We should start small and then continue to expand
 - Also the benefit of online is that we can continue to revise annually
 - An outcome of this workshop will be expanding the online handbook
 - Community Collaboration amongst: Connecting with these communities and how to scale better?
- Points of collaboration for us
- Creating a resource list?
 - We know how to ask about gender, how do we ask about age? Country? Learning styles/preferences?

- Which graphical icons should we use for each gender in figures? Specifically, how to represent non-binary individuals?
- Cognitive diversity (how do we phrase this?)
 - How do we ask about Autism, dyslexia? And other cognitive issues
 - cc// Anita's Gender Mag how to ask about different levels of cognitive preferences:
 - <https://drive.google.com/drive/u/1/folders/1p-SxDkp5PJh-x18Q9HHZ6aYTboiVH-cD>
- Circle of Trust:
 - Perhaps we should as a community strategically collaborate on returning findings to the community
 - During this process do we present/give chance to review?
 - Kate mentioned getting community to review the work before it goes to the publication
- Study Design of gaining participant trust
 - Should we develop our own reporting strategies for identifying challenge/uncomfortable experiences from participants
 - Guidelines for creating a safe interview space
 - (one of the things I have been doing during the interviews is: 1) mention during consent form time that we won't share raw data/all data will be anonymized, 2) reiterate that when they are saying sensitive things, 3) offer the option of not recording/noting down some parts if they feel uncomfortable
 - Peggy suggested to refrain from using the word "interview" and refer to it as conversation, to reduce the power imbalance between the interviewer and interviewee
 - This can really open the dialogue
 - Anita: Helps to get narration.. "Tell me your story..."
 - Bianca: As part of the interview strategy, sometimes the conversation touches some delicate point, and participant needs space, we can look down to our notes (to avoid stare) to enhance the privacy, or even do a water-break
 - Having multiple (2) researchers be apart of the conversation so that one person can skip questions and the other can stick to script
 - Goo deeper...why, then you get lot of deeper insight
 - Having interview script as a printed vs. online
 - Setting for interviews: somewhere safe and comfortable but also provides privacy
 - Humanizing and reducing the power dynamic virtually by sparking a conversation based on backgrounds
 - When participants describe intense experiences how do we respond:
 - Recommendation: pause and ask the participant to respond
 - Also resources for guidelines on how to protect ourselves as researchers doing this work:
 - https://datasociety.net/pubs/res/Best_Practices_for_Conducting_Risky_Research-Oct-2016.pdf

- Create a blog post or somewhere where we report the moving stories (OMG, this happened) that's across studies/researchers so that the data/participants can be de-anonymized.
 - But are we breaking trust if we use them for different purposes.
 - Make them as scenarios akin to ethics courses
 - Get reconfirmation of consent from participants
 - Here is an example from HCI
 - <https://dl.acm.org/doi/abs/10.1145/3313831.3376392>
 - <http://iogburu.people.si.umich.edu/articles/CHI2020.pdf>

Resources List

- Papers in HCI that discuss intersectional concepts
 - Finda Ogburu, Kentaro Toyama Paper on narratives of discussing race in HCI: [Critical Race Theory for HCI]:
 - <http://iogburu.people.si.umich.edu/articles/CHI2020.pdf>
 - Becki Grinter paper: Intersectional HCI: Engaging Identity through Gender, Race, and Class:
 - <https://dl.acm.org/doi/10.1145/3025453.3025766>
 -
- How to conduct gender studies/ surveys/ interviews etc
 - [handbook from Morgan Klaus](#)
- Reporting results on racial minorities:
 - <https://cacm.acm.org/blogs/blog-cacm/245710-underrepresented-minority-considered-harmful-racist-language/>
- What method to use
 - Selecting Empirical Methods for Software Engineering Research (Easterbrook et al)
 - https://link.springer.com/chapter/10.1007%2F978-1-84800-044-5_11
- How to conduct surveys
 - T. Barik and E. Murphy-Hill. A process of surviving survey design and sailing through survey deployment from DS4SE
 - R. M. Groves, F. J. Fowler, M. P. Couper, J. M. Lepkowski, E. Singer, and R. Tourangeau, Survey Methodology, 2nd ed. Wiley, 2009.
 - B. Kitchenham and S. L. Pfleeger, "Personal opinion surveys," in Guide to Advanced Empirical Software Engineering, F. Shull, J. Singer, and D. I. K. Sjoberg, Eds., 2008, pp. 63–92.
 - J. Singer and N. G. Vinson, "Ethical issues in empirical studies of software engineering," IEEE Transactions on Software Engineering, vol. 28, no. 12, pp. 1171–1180, Dec 2002.
 - Alessio Ferrai Lectures 8.1
 - https://www.youtube.com/watch?v=9aMBFn64t_Y&list=PLSKM4VZcJjV-P3fFJYMu2OhITjEr9Bjl0&index=16&t=0s and 8.2
 - <https://www.youtube.com/watch?v=dfdZjkH89jI&list=PLSKM4VZcJjV-P3fFJYMu2OhITjEr9Bjl0&index=17&t=0s>

- J Linåker, SM Sulaman, R Maiani de Mello, M Höst. Guidelines for Conducting Surveys in Software Engineering. 2015.
<https://lup.lub.lu.se/search/publication/5366801>
- M. Torchiano, D. M. Fernández, G. H. Travassos and R. M. de Mello, "Lessons Learnt in Conducting Survey Research," 2017 IEEE/ACM 5th International Workshop on Conducting Empirical Studies in Industry (CESI), Buenos Aires, 2017, pp. 33-39, doi: 10.1109/CESI.2017.5.
- de Mello, R. M., Da Silva, P. C., & Travassos, G. H. (2015). Investigating probabilistic sampling approaches for large-scale surveys in software engineering. Journal of Software Engineering Research and Development, 3(1), 8.
- S. Baltes and S. Diehl. Worse than Spam: Issues in Sampling Software Developers. <https://arxiv.org/abs/1707.00838>
- How to conduct focus group studies
 - J. Kontio, J. Bragge e L. Lehtola, "The Focus Group Method as an Empirical Tool in Software Engineering," em Guide to Advanced Empirical Software Engineering, London, Springer-Verlag, 2008, pp. 93-116.
 - E. Colucci, "'Focus group can be fun': The use of activity-oriented questions in focus group discussions," Qualitative Health Research, vol. 17, nº 10, pp. 1422-1433, 2007
 - Chapter 8 in this book:
<https://www.sciencedirect.com/book/9780128053904/research-methods-in-human-computer-interaction>
 - [Methods of data collection in qualitative research: interviews and focus groups](#)
- How to do diary studies
 - See Chapter 6 in this book:
<https://www.sciencedirect.com/book/9780128053904/research-methods-in-human-computer-interaction>
- How to conduct interviews
 - C. Bird. Interviews from DS4SE.
 - Per Erik Strandberg. Ethical Interviews in Software Engineering
 - Alessio Ferrari 6.2 Sampling and Interviews
<https://www.youtube.com/watch?v=TFsfAC0GuEQ&list=PLSKM4VZcJjV-P3fFJYMu2OhITjEr9Bjl0&index=13&t=0s>
- Action research?
- How to do qualitative coding with an Activist lens (Denae)
 - **Books:**
 - Brown, L. A., & Strega, S. (Eds.). (2005). *Research as resistance: Critical, indigenous and anti-oppressive approaches*. Canadian Scholars' Press. (2nd edition)
 - <https://www.canadianscholars.ca/books/research-as-resistance-2nd-edition>

- Creswell, J. W., & Creswell, J. D. (2017). *Research design: Qualitative, quantitative, and mixed methods approaches*. Sage publications. (5th edition)
 - <https://us.sagepub.com/en-us/nam/research-design/book255675>
- Miles, Matthew B., A. Michael Huberman, and Johnny Saldana. "Qualitative data analysis: A methods sourcebook." (2014). (4th edition)
 -
- Sample resources to reuse
 - Cognitive Style questionnaire that gets to: Motivations, self-efficacy, risk averseness, learning style, information processing style
 - <https://drive.google.com/drive/u/1/folders/1p-SxDkp5PJh-x18Q9HHZ6aYTboiVH-cD> (alpha version)
- Survey Question Demographic Database
 - Maybe something we want to keep amongst ourselves at our own risk... and even list feedback

Building the community of researchers and practitioners on SDDI

Breakout theme: Building the **community of researchers and practitioners** on SDDI (**Lead:** Kate Stewart)
3:30pm-5:50pm Pacific

Participants: please either add your name here if you participated in this breakout

- Kate Stewart (lead)
- Italo de Oliveira Santos
- Jocelyn Simmonds
- Anita Sarna
- Rafael Prikladnicki
- Mariam Guizani

Topics to discuss:

- If the SDDI workshop (2019, 2020) is a first step towards building this community, what else can we do/plan?

Introductions

Discussion points:

- Engaging with the community, building pipeline of trust
- Getting buy in from community - aligning interests

Open Questions:

- How to operationalize this?
 - Go where they go. Read back through their archives
 - Who are the decision makers/thought leaders
 - Find an ally..helps to get them to make an introduction
 - Circle of trust
 - Listen to the problems the community is facing
 - Ex. Octo project doesnt have enough female contributors, the Tech Steering Committee is all male (only 1 non-white)
 - Ex: GCC steering committee, has an issue of pipeline, so interested in what interventions they can do
 - Talking in person -->how to go remote with that
- Industry to Academic - how can we connect?
 - Apache, Mozilla, Linux Foundation (LF), Eclipse, CHAOSS project (D&I) group under LF
- how to engage more people in the community?
 - We can look at how the HELENA survey is working to get more diverse opinions on software processes(<https://www.researchgate.net/project/HELENA-SURVEY-Hybrid-dEveLopmENt-Approaches-in-software-systems-development>). It's like 50+ researchers working on this project.
- What else is working?
 - Rafael - research protocol, and get buy in to replicate globally.
 - 170 organizations, all concerned, but not actively doing something. Reach out to the actively doing something. Get preliminary set and start small, get results, and then recruit out.
 - "Think big, start small, move fast"
- What motivates reach out to students? Context and higher goals - get caring more
 - Earlier interventions helps diversity
 - Why would students want to participate?
 - Showing what they can achieve?
 - Aspects of visible participation?
- Consider Global Cultural Aspects?
 - Styles of communication, language barriers.

Practitioners:

- Companies
 - Executives,

- Managers
- Thought Leaders (CTO, OSPO, ..
- Foundations (groups of projects)
 - D&I interest groups
- Individual projects
 - Those that are struggling, looking for insight on how to improve.
 - Older communities
- Students
 - Different levels - university, highschool, earlier.
 - Service learning (giving back to school and community after learning) <https://en.wikipedia.org/wiki/Service-learning>
- Government
 - Buy in, regulatory
- Hackathons & non-traditional learning
 - Improving self, badging,
 - Helping others.

Researchers

- In industry
 - Link to company stakeholders easy.
 - Collaboration between other industry researchers.
 - Common agreement from industry researchers on protocol to follow?
 - Towards specific?
 - Research that is actionable
- In Academia
 - Challenge is identification of goals?
 - Applied Research
 - Broad/Fundamental
 - Research for recommendation or policy → channel to be nationwide.
- Government
 - Do we have researchers here? Self identified or not?
 - “Task forces”
 - Research funding agencies.

Building up Community between these groups?

- Alignment of Goals
 - Short term, long term
 - Measurements agreed on
 - Different ways of participating
 - Level of engagement
- Sharing resources & gathering feedback
 - Key dates and acronyms, conferences, ...
 - Academic conference - where master
 - Not structured for practitioners to engage effectively

- ICSE - cross check with member check, are problems real. Pulling practitioners to be co-authors? ??, ROSE,
- Practitioner conference
 - CHAOSScon, OSS, ApacheCon, Company confs, Hackathons
 - Live database of options. :: cfp, conf format, cost ...
 - Industry Tradeshows...
- Free conferences going to online... easier for others to attend.
 - Silver lining of COVID-19? ICSE
 - Out reach to each other communities.
- Building up circle of trust,
 - start small, move fast. ... these sort of workshops are useful.
 - "Channels" with people of common interest, and follow up with meetings.
 - Creation of mailing list on topics of interest, Or find a mail list to join?
- Inclusion activities
 - What works to build the relationships?
 - Activities for Introverts? Meals, etc. - what would be virtual equivalent?
 - Research group example: friday afternoon board game/social hour. Scriblio? Limit group playing. More structured way of interacting. Talk about game/strategy.
- Visibility - how do we get more? Market? Show that other are interested.
 - Outreach - where makes sense to reach beyond word of mouth
 - Logo/images that people can gather around.
 - Similar interests - CHAOSS - podcasts, ask to publish summarizing blog posts.
 - Start small... 1 thing at a time.
- "Art of Community" ... can we apply lessons from book to the problem?

Ideas to carry forward:

- Virtual conferences to participate in - from other domains.
 - Catalog of Academics - make more visible to practitioners
 - Catalog of Open Source practitioner ones
 - Workshops
 - Open Hackathons
- The goals definition of the community
 - Define the "why", what we want to achieve.
 - Clarify thinking, so others can fit in. Framework.
 - "way to work", "norms", charters... member checking, how communicate things?
- Visibility
 - Banding together, creative elements, making individual researchers work more visible (twitter citations), Open Access... costs money. Email to authors for access.
 - Video - listen to youtube. Strong accents. Pause and go back.

Diversity and inclusion in software education

Breakout theme: Diversity and inclusion in software education

7:30 - 8:50* am Pacific

Topics:

- Sharing ideas
- Guidelines
- Gotchas

Participants: please either add your name here if you participated in this breakout

- Alexander Serebrenik
- Paige Rodeghero
- Martin Dybdal
- Felipe Ebert
- Alannah Oleson
- Stephanie Ludi
- Gema Rodriguez Perez
- Raula Gaikovina Kula (Au Gai)
- Emerson Murphy-Hill
- Grischa Liebel
- Rafael Prikladnicki
- Honey Sukesan
- Ita Richardson
- Peggy Storey
- Jocelyn Simmonds
- Italo Santos

Discussion points:

Introductions

Challenges mentioned

- How to diversify incoming population?
- How to make everyone feel welcome?
- Specific populations: women, autistic folks, blind/vis impaired, older adults, nonbinary/trans folks

- Recruiting CS teachers (esp recruiting women to teach)
- Ways to keep underrepresented students in the department
- How to recruit underrepresented students
- Native/Indigenous/First People students: how to understand their perspectives on technology and education (one related
- link:
https://www.researchgate.net/publication/312750855_An_Indigenous_Learning_Approach_to_Computer_Science_Education)
- Funding for research
- Scaling interventions to large programs (especially course/program level)

Sharing ideas:

How to diversify the incoming populations?

- Funding for going to conferences for marginalized identities e.g. grace hopper conf
- Quotas for who gets into the major
 - Doesn't necessarily seem to work -- more women on campus != more women picking the major
- Starting at the highschool level -- training highschool teachers to teach CS to students for exposure before college (South Carolina)
- Hosting summer camps for incoming freshman and particular groups
- Women more likely to come into more specific courses rather than general computer science (e.g., bioengineering, more interdisciplinary programs) -- there is evidence from cased research that relating to applications or community efforts
 - Media computation course -- Guzdial, Mark. "[A media computation course for non-majors](#)." Proceedings of the 8th annual conference on Innovation and technology in computer science education. 2003.
 - Kafai, Yasmin B., et al. "[Stitching the Loop with Electronic Textiles: Promoting Equity in High School Students' Competencies and Perceptions of Computer Science](#)." Proceedings of the 50th ACM Technical Symposium on Computer Science Education. 2019.
 - The whole Glitch game testing program series of papers, which focuses on Black men in computing: Steven Simmons, Betsy DiSalvo, and Mark Guzdial. 2012. Using Game Development to Reveal Programming Competency. In Proceedings of the International Conference on the Foundations of Digital Games (FDG '12), ACM, New York, NY, USA, 89–96. DOI:<https://doi.org/10.1145/2282338.2282359>
 - Davis, James, et al. "[A cultural computing curriculum](#)." Proceedings of the 50th ACM Technical Symposium on Computer Science Education. 2019.
- Ita: Personal contact makes a huge difference. (Especially with respect to getting women and other minorities into undergraduate and graduate programs)
- High school programs in tech (UVic TechU)

- Peggy: show applications of CS to other domains to recruit switchers from those domains to CS
- Jocelyn: Critical to build a community (are there best practices for doing this in an educational space in particular?)
- From Italo: <https://technovationchallenge.org/>
- From Margaret: <https://csunplugged.org/en/>
- Any success with efforts reaching out to lower SES folks?
 - Some success at Ita's institution, but it seems like it's all men that join
 - Challenges: Access to computers and tech. Also not a lot of funding in the space
 - Lots of these efforts rely on volunteer work (time constraints), or having the right funding source at the right time
- How can _we_ help make change around D&I in software education?
 - Collect all the resources we've mentioned in one place -- this is what we've tried, this is what's successful, this is how you can replicate in own places
 - Listing out all the success stories in a format usable by students/use for inspiration

How to support underrepresented folks in class?

- Support appropriate assessment of own skill level (esp. Seen to be a problem with women). Solution tried: peer assessment, with a checklist of things they can see that they've done, to support their self-assessment skills by practicing it through looking at other students work
 - But does that change perceptions? Difference between telling them they're doing good work, and getting them to believe it
 - Relevant paper on how computing classes can be unwelcoming spaces for folks who don't fit stereotypical computing identities: Lecia Jane Barker, Kathy Garvin-Doxas, and Michele Jackson. 2002. Defensive Climate in the Computer Science Classroom. In Proceedings of the 33rd SIGCSE Technical Symposium on Computer Science Education (SIGCSE '02), ACM, New York, NY, USA, 43–47. DOI:<https://doi.org/10.1145/563340.563354>
- Becoming anti-racist in CSC, blog post and paper:
 - CACM article: <https://cacm.acm.org/blogs/blog-cacm/245408-cs-teachers-its-past-time-to-learn-about-race/fulltext>
 - Blog post and followup: <https://computinged.wordpress.com/2020/06/08/lets-talk-about-race-in-cs-education-more-resources/>

Guidelines:

- Stephanie: Focus on a specific age-range

- Stephanie: Girls also respond positively to unplugged activities. Those can also work in the virtual setting: e.g., think about how would you tell a robot to make a sandwich. (examples from CSUnplugged)
- Small breakouts work well
- Awards ceremony for each school that integrates CS into the curriculum (Ireland).
 - Each school must bring one person of each gender to the event
- Martin (from chat): That's also another great thing with Teams compared to Zoom, they can see all the other breakout rooms, that everyone else are also working

How to react to the pandemic, and take advantage of it -- could help with diversity/inclusion:

- How to help older people come into or come back to tech:
- Coding academy courses
- See this program: <https://techmums.co/>
- Share materials and courses/guest lectures
- Reach out to students from remote areas/broader socio-economic groups

Tips and tricks:

- Invite colleagues to give guest lectures
- Peggy: Have a Q&A session with the authors
- Raula: Use videos of conference talks to support paper reading

Anti-racism CS education reading group

- [Call It What It Is: Anti-Blackness](#)
- *An Open Letter & Call to Action to the Computing Community from Black in Computing and Our Allies* ([letter](#), [action items](#))
- [When Twice as Good Isn't Enough: The Case for Cultural Competence in Computing](#)
- [Stuck in the Shallow End, Introduction](#)
- [‘Losing an arm’: schooling as a site of black suffering](#)
- [Workifying Games: Successfully Engaging African American Gamers with Computer Science](#)
- [The Intersection of Being Black and Being a Woman: Examining the Effect of Social Computing Relationships on Computer Science Career Choice](#)
- [Ethics, Identity, and Political Vision: Toward a Justice-Centered Approach to Equity in Computer Science Education](#)

Diversity, Differentiation and Divide in Software Engineering

Breakout theme: Diversity, Differentiation and Divide in SE (Lead: Sophie Qiu)
12:30-1:50pm Pacific

Participants: please either add your name here if you participated in this breakout

- Sophie (lead)
- Alexander Serebrenik
- Amber Horvath
- Martin Dybdal
- Rafael Maiani de Mello

Topics to discuss:

Introductions

Discussion points:

- Diversity - highly visible and celebrated, people are becoming more similar
- Differentiation - hidden figures, body shops, international students/workers
- Divide - cold war between US and China, where differences are used to support politics

In SE

- Diversity - West-centric mindset in diversity research. We are not discussing minority groups in non-Western countries.
 - Limitation of diversity inference mechanisms based on names: migration/second generation, but also lumping together all countries having similar names (e.g., Spain and all Latin American countries).
- Differentiation - power dynamic related to roles SWEs are taking (stereotypically women take front-end positions while men take back-end roles)
 - Testing - women are more commonly testers than SWE roles
 - Gender division of labor

- Concern that stating a difference reinforces that stereotype
- Power dynamics in OSS
 - <https://github.com/all-contributors/all-contributors-cli>
 - Diversity played differently in different levels
 - Yu's work on eye-tracking
 - Neurological skills for different tasks
 - Testing, code reviews
 - Software engineering field requires more collaboration in CS, many different roles
 - Promotable vs non-promotable tasks
 - Tasks done equitable between genders
 - Women are more likely to be assigned non-promotable
 - But men are more often assigned to do code review
 - Tasks may have less obvious benefits, multi-facets of what a work is
 - Add non-promotable tasks (e.g. code review) to performance review
- Divide
 - India banned many Chinese apps
 - GH, FB, G not available in China
 - They have their own local version
 - Even GH available in China, people are afraid it will be banned, so they create their own version
 - Political tension splits the idealized, global software
 - Can't change the society, but we can create awareness
 - Even on GH, people from different countries use different languages to communicate in their project
 - But many apps are in the US, all people use english. We are losing context of people from other countries.
 - We could use translation tools to incorporate corpus in other languages
 - How english language is used. Create some kind of variants of english used by different regions.

Ideas to carry forward:

- Divide: Translation tools accuracy/reliability for expanding software engineering text corpora
 - But this depends on tasks
- Differentiation: Promotable vs. non-promotable tasks in SE
 - In OSS: reputation? Prestige in the community? Core contributor?
 - What you can vs can't do (commit rights) -> hierarchical
 - Large ecosystems have structures (open stack)
- Diversity/Divide: Information overload
 - People in different countries use different tools to communicate, and the culture around the usage of those tools evolve differently

- But when people are all using the same platform, does it reduce diversity (people are more similar fundamentally)?

Diversity and Inclusion Activities for Virtual Conferences

Breakout theme: D&I Activities for Virtual Conferences (Lead: Andrew Begel)
3:30-4:50pm Pacific

Participants: please either add your name here if you participated in this breakout

- Andrew Begel (lead)
- Raula Gaikovina Kula (Au Gai)
- Gema Rodriguez Perez
- Peggy Storey
- Paige Rodeghero

Topics to discuss:

- How do we promote the visibility of D&I activities?
- How do we ensure engagement with D&I activities?
- What activities would you like to see in upcoming conferences?
- How can we adapt existing D&I activities for a virtual setting?
- What activities have you done that have worked?
- What activities have you done that didn't work?
- Are there additional constituencies we can target more effectively now that we're in a virtual setting?
- How do we handle time zone differences in the activities?
- What technology do we use?

Introductions

Discussion points:

- Multi-cultural Exchange Powerpoint presentation
- Student exchange
- Playing Games (e.g. Werewolf)
- Ask Me Anything / Research Coffee Hour

- Lesson learned from ICSE: do be careful with making sure there is diversity in people recruited for this -- also doesn't just have to be senior people
- Famous CS people from my affinity group? Hidden Gems.
- Chat Roulette
- Discord for chat
- Accessibility of environment?
- <https://gather.town/> creates a virtual environment.
- Clowdr: <https://www.clowdr.org/>
- Check out <https://cci.mit.edu/minglr/>
- Mozilla Hubs
- Wine and Cheese Hour
- Telepresence Robots - for virtual/face to face hybrid conferences
- Social Hour - don't talk about the conference.
- Time zones
 - Replicate in multiple time bands? Or just pick one.
 - How do you find enough people to be a part of it?
 - What if it brackets your day? Do you need to be at the conference *and* at work?
- How do you capture attention in virtual conferences?
 - Declare yourself out of office at a conference.
 - Cognitive diversity - ADHD, paying attention to facebook and other appointments.
 - Conference software that prevents me from using any other app?
 - Make audience members write notes to make others pay attention.
- Hard to reach constituencies?
 - Speakers that aren't comfortable in English
 - Watch videos with transcriptions to practice listening to English
 - Auto translation during talks and conversations.
 - Presenting with auto captioning.
 - Scrollback/transcripts of auto captioned material.
 - Persistent display of people's names with their pictures.
- How do you meet new people at conferences?
 - Easy to gravitate to people you already know or students.
 - In Zoom meetings, spending time with people i didn't know before. Breakout rooms help.
 - Introductions at the beginning of the breakout help to recognize faces and voices.
 - Limited sets of people are difficult to remember.
- Meet my pets/emotional support animals hour?
- Diary study of conference attendees attending virtual conferences?
 - Again, forcing the audience to pay attention.
 - How do you motivate it?
 - Diary award? Maybe not. But make it public, anonymous?
 - Diary in your own native language.
- Virtual conferences make me on time. Intentional about being on time.
- Working with the blind and deaf, some problems are not for others.
- Emotional support items for the conferences.

- BoF for each affinity group (e.g. women, lgbt)

What's better for people online in virtual conferences?

- Reduced harassment
 - Other people are on call, so it reduces that.
- Cognitive differences:
 - Autism: Reduces stress and anxiety from face to face. Dropping video reduces cognitive load and lets people focus better on the conversation itself.
 - ADHD: better be face-to-face, more difficult to read social cues on video.

Video conference causes delay due to bad internet connections. Hard to tell when it's ok to speak.

- Hard to record talks when giving talk to no audience. How do you tell if anyone is understanding what's happening? Do you know if they understand you?
 - How do you get feedback?
 - Clapping at end of talk
 - Raise Hand feature.
 -
- Nice to ask people to clap at end of talk -- more intentional communication
- When people have their video on are they more intentional with their facial expressions
- Affordance: knowing who is there and getting lists of people who attended
- Lot of research is ongoing for meetings could apply for conferences perhaps (Sean Rintel/Abi Sellen is leading that work at Microsoft)
- Training audience members on how to be a good audience member.
 - Empathy training (how would you feel if you spoke and no one paid attention)
 - Hard to talk to a sea of dead faces.
 - People with videos on give facial feedback.
- Giving a talk live/recorded
 - Anxiety can be terrible for some people giving live talks.
 - Some people it's better to be recorded.
 - Some part of this for audience is performative/entertainment.
 - Make some people's talks better?
 - Record outside or in scenes around town?
- Award for most interesting presentations?
 - Non-Powerpoint talking heads.
 - Take scenes from around town or your backyard?
 - Media of giving talk during virtual conferences needs to change.
 - Tik tok style dances?
 - Tik tok your conference presentation.
 - 1 minute madness - tik tok your talk - do a skit/dance/art/song...
- Talent show -
 - Share your interests
 - Do a trick

- Dance/Sing/Music

Not replicate conferences for virtual conferences. Let's use the technology to define something new.

- Tell people how much screen time/online time you've spent at the conference.
 - Running out of spoons. How an icon to show your time zone as well as online time?
- The future of work conference was just 3 or 4 hours a day -- that really worked for me and other attendees loved it
- Write your OOO email... take breaks..
- Need to educate our chairs to realize your conferences are still important...
- Respecting faith boundaries for rest days: conferences only on Tues-Thursday. Stop having virtual conferences on weekends.
-
- What does an async conference look like?
 - Do a natural experiment?
 - Split people by cognitive style and preference?
- Synch conferences can be very long
 - Zoom fatigue
 - 3-4 hour days are much better.
- Let's have fewer conferences, fewer papers that are better, more wow papers.

Ideas to carry forward:

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Doing D&I research in company context

Breakout theme: Doing D&I research in company context
10:30-11:50 am Pacific

Participants: please either add your name here if you participated in this breakout

- Emerson (Lead)

- Camila Sarmento
- Bianca Trinkenreich
- Amber Horvath
- Mariam Guizani
- Ayushi Rastogi
- Denae Ford
- Alannah Oleson
- Sayma Sultana
- Andrew Begel

Topics to discuss:

- Getting “approval” for D&I studies

Introductions

Discussion points:

- Access to data - can be easier if you are currently working at the company
- Some folks have a ½ academia, ½ industry appointment, others are 100% research, and others need to do research on their own. For any of those cases, having a sponsor who is interested in your results is quite relevant to help you on getting participants' availability (attention and time)
- Larger companies with research departments will have significant processes in place. May involve an IRB or privacy design doc, consultation with internal legal teams. The more sensitive the population is, the more attention to IRB we need, knowing (and planning in our schedule) that the approval process can take time and many rounds. Large companies whose business is not IT can not have an IT research department. You need to get approval to use the data anyways, and the approval process can be ad-hoc.
- In research, it's advisable to avoid harassment issues, or anything that's really a violation of law or a code of conduct, because those require escalation to Human Resources. It's also important to check what data your company lets you publish, as it can vary and be different for each company.
- Employees are a vulnerable population according to IRB
- What studies are easier or harder to do in industry?
- Experimental studies are better to do outside industry (e.g., academia).
- How do you connect with a community (e.g. latinx women), if you're not a member of that community (e.g. white man). Don't require members of that community to participate, but invite them instead. Engage them. Can they help making sure your survey questions are in the right language? Language is not only English, French, Portuguese, but using the terms aligned to the ones used by the target population.

Ideas to carry forward:

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Follow up Publication

Breakout theme: Follow up Publication
9:00-10:20 am Pacific

Topics:

- Ideas for follow up publication

Participants: please either add your name here if you participated in this breakout

- Alexander Serebrenik
- Rafael Prikladnicki
- Akond Rahman
- Camila Sarmento

Discussion points:

Introductions

Ideas

- Summary of studies on diversity in Software Engineering
 - What are the main results in this area
 - What are the open challenges in the field
- A Handbook if someone wants to implement or study diversity, what should they do?
- Discuss ideas and summarize in vision papers to be published
 - Manifesto? Journal paper to set the ground of this area and community with open research questions and opportunities.
- A website to keep track of information related to this community on SDDI

If we publish a book how can we balance

- Availability of the materials to everyone interested
- A formal publication (to encourage the authors)

- Possible solution DS4SE: chapters on GitHub but it is still a formal publication: <https://github.com/ds4se/chapters> and “Perspectives on Data Science for Software Engineering”
 - Part 1: Motivation, success stories
 - Part 2: Tools and techniques
 - Part 3: Open challenges

Support a book by a seminar

- Dagstuhl <https://www.dagstuhl.de/en/program/dagstuhl-seminars/>. Great idea but problematic timeline (1.5 years from the application till the seminar itself, and maybe the same time or longer till the book has been published).
- Banff <https://www.birs.ca/applicants/guidelines/>
- Shonan -- this would require a strong Japanese involvement. Raula?

Another example is what was done in the software startup community:

- The community: <https://softwarestartups.org/>
- The TSE paper in 2016: <https://www.computer.org/csdl/journal/ts/2016/06/07360225/13rRUwInvCA>
- The book published by Springer in 2020: <https://www.springer.com/gp/book/9783030359829>

Three ideas for follow up publications (Form small groups interested in each of these)

1. Journal paper
2. Seminar
3. Book

“How to” of diversity research

Breakout theme: “How to” of diversity research
10:30-11:50 am Pacific

Participants: please either add your name here if you participated in this breakout

- Alexander (lead)
- Gema Rodriguez Perez
- Peggy Storey

- Felipe Ebert
- Anita Sarma
- Kelly Blincoe
- Jocelyn Simmonds

Topics to discuss (preliminary from yesterday):

- What are the best practices in approaching underrepresented groups?
- How can we (and should we) include non-group members in conducting such research?
- What are the common pitfalls and how to avoid them?

Discussion points from today:

- How to not harm people and overload them with invitations? What other kinds of harm should we be aware of?
 - Maybe we need some kind of guidance for this kind of research – things to consider e.g., types of harm... how to recruit, how to give back (creative ways of doing so).
- If you are not members of the community, how can we be sure we do not misinterpret their experiences? We can do member checking, but what else can we do?
- How do we reach out to people we wish to study? E.g., use Reddit for reaching out to neurodiversity developer? Or should we use snowballing approach? What is the right way to do this?
- Which methods should be used (not used)?
- Should we pay them? But how much? And is paying the minimum ok to do when we can't pay more

Reward:

- If financial reward, is low amount not insulting?
- Still, financial, can we say that we contribute to a good cause, e.g., BLM?
- Explain why what we are doing is beneficial for them?
- Prepare a polished podcast or a public summary?
- “You are not alone” argument can work for the problem-space studies. Building community around the paper.
- Make the participants co-authors of our studies. Ensure that the story is their story. Involve people in the design of the study, not only in the execution of the study

Methods are important!

- Focus groups help with the “you are not alone”. There are ways of running focus groups on-line. Supports reflection and contribution -- think of participants as contributors to the research rather than participants or informants...
- Giving presentations at OS conferences (FOSDEM etc). It might be difficult to get into these spaces with D&I topics but it is possible.
- Building trust with the participants is essential - -share how previous or related research benefitted those communities

- Semi-structured interviews with open-ended questions are beneficial to get through the ERB.

Sometimes talking to each other (focus groups) can help the participants to change the ways they think, the ways their processes and tools are organised. Sharing stories is important. Focus group is a journey of self-reflection.

- Talk to activists
- (evangelists): Know what we can give back to the community. They can help with the description/questions in the interviews.
- Building empathy is also important...embeddedness-> ethnography (deeply engaging). Researchship - do intern with a different community. Example, hang out in the chat rooms.
- In addition to focus groups diary studies can also be very rich (but they take time to analyze)

Challenges:

- Doing this kind of research well takes time and training!
- Knowing about types of harm -- but also what to do if you do create harm unintentionally → need to listen, be open to feedback...
-
- Don't harm participants:
 - What happens when you screw up, how do you apologize
 - Prepare a remediation plan
- Make interviewees comfortable with you in the beginning so that they can stop you and correct it.
- Recruit: I would like to have a conversation with you, since you know more about it than I do... Have compassion for yourself. Since you will screw up.
- Do member checking, can do before as well as after to check interpretation and the questions you would even ask.

Make the results

IRB:

- Make the goal reallllly broad. (improve software engineering process).

Recruitment:

- Minority: Women (example): eg,. GitHub....mining data and sending emails
 - Be careful of GDPR.
 - MSR tutorial: mining in the realm of GDPR.
 - <https://2020.msrconf.org/details/msr-2020-Education/1/Mining-Software-Repositories-While-Respecting-Privacy>
 - GHTorrent debacle: the problem was that GHTorrent exposed email addresses of GitHub developers that were available in git repositories. Still the email

addresses had to be removed: while GHTorrent did not create new data that was not available on GitHub it has facilitated access to the data.

- GitHub Rules: You are not supposed to scrape personal information (email is personal)
- Think of diversity of the projects/top developers.
- LGBT: contact with LGBT@Tech slack
- Snowballing
 - Go to a conference to see who you can go.
 - Who else should I talk to? Keep long referral chains
- Personal contacts
- Think of diversifying the target population: Western/ English &/or Spanish
- We need to think of benefits/limitations/risks of recruitment channels (e.g., personal emails versus facebook post)
- How do you break into a population that you are not a part of.
 - Collaborate with researchers who are part of that community (e.g, crowdsource)
 - Build trust
- “Nothing about us without us” so how do you build

Ideas to carry forward: A Handbook (create a separate doc for this?)

- Perhaps write a handbook with small chapters (like the SuperDog Data Perspectives book) on how to do D&I research, first part on how to do it, second part perhaps like a cooking book (see also the breakout on future publication)
 - Member checking how to do it
 - How to do recruitment, how to build trust/empathy
 - What kinds of harm to be aware of (e.g., oversampling the same people, using inappropriate language, asking sensitive questions)
 - Which methods to use and why (benefits/limitations/risks), e.g., using focus groups, diary studies, experiential surveys
 - Guidelines for asking appropriate questions: e.g., <https://www.morgan-klaus.com/gender-guidelines.html>
 - How to do interdisciplinary research
 - Example studies -- what worked / what didn't work well -- what did we learn
 - Mining with respect to GDPR
 - Ethics
 - How to do participatory research with members of the community
 - How to give back (different ways of giving back -- beyond blog posts)
 - Other guidelines, e.g., “Nothing about us without us”

Interventions to improve Diversity and Inclusion in software teams and organizations

Breakout theme: Interventions to improve Diversity and Inclusion in software teams and organizations (Lead: Peggy)

12:30-1:50pm Pacific

Participants: please either add your name here if you participated in this breakout

- Peggy Storey (lead)
- Andrew Begel
- Mariam Guizani
- Grischa Liebel
- Gema Rodrigue
- Carolyn Egelman
- Kelly Blincoe
- Anita Sarma
- Denae Ford
- Sayma Sultana
- Amiangshu Bosu
- Bogdan Vasilescu

Topics to discuss:

- What works,
- why
- what doesn't work (things to avoid)
- What is ok to try from an ethical perspective
- ...and what are typical pitfalls with respect to ethics!
- How to measure impact of interventions
- How did you get buy in for it , how did you mock it
- How to do tech transfer of research ideas (beyond lab)
- What can we do about biases if we know about them?
- What interventions can we design to detect, reduce biases

Interventions we've tried:

- Andy: **developed a course for neurotypical employees to work with neurodiverse colleagues**, includes fundamentals of communication, differences in style, how people learn about their own communication practices and preferences → lot of new concepts

came out from this -- 8 people tried it... he's had an intern for it during the Summer - 10 min online course compressing 2.5 hours of material... (video vignettes). Online assessment quizzes are incorporated as well. This is one module of 4-5 module course.

- Lessons learned: empathy of how people think differently -- helps people to take steps to accommodate but also to communicate and talk to others about it in a safe way
 - What didn't work so well? video/conf technology isn't so great for breakouts on the fly (he was using teams, Zoom isn't ideal either). Also asked people to switch roles -- this didn't work. Empathy only goes so far... you need people with the disability in the room.
 - Question: Q to Andy: How are you planning on making the 10 min video...why 10 min?
What I am trying to get out: how to create things that we can give back to the community
 - A: Online course modules typically max out at 10 minutes. beyond that, people get bored and stop listening. we're also planning to make a 4 module course in which each module is 10 minutes so consider it an experiment to limit how much continuing education time we want to push on people
-
- Carolyn: <discussed intervention that Google has tried>
 - Denae: Stackoverflow mentorship program for women/non binary and other cultures. How to support people that were new... they had a designer, developer and program manager, community growth to grown the population -- motivated already to work on this. Designer carved out design constraints with the platform, when they could engage -- can't until they've written a title for example... important to know more about the tool/process... had to wait till they hit "post"... so already selection bias at place here! Didn't find the lurkers... only had the log data and had flexibility about how to design the intervention though.
 - What worked and why: they could share the transcripts from the help room. They could help with design the guidelines -- was very different to what researchers would do without Stackoverflow perspective... they were actively engaged. SO is very interested in these collaboration studies -- Denae can introduce and connect folk about this. She benefitted from getting access to a lot of data... (first to study this). Make things digestible for non-academics. Have multiple digestive ways
 - What didn't work well: Time zones didn't help (people didn't show up...), scalability was an issue... some mentors were very excited and wanted to stay ... but if they weren't in the room was closed... and got into loops and mentor fatigue because of it! And some did drive by mentorships which was a challenge too. Lot of people managing...
 - feedback for future : have a researcher on company side -- they ended up creating a welcome bot so people didn't immediately drop off if their questions weren't answered.
 - Links: <http://denaeford.me/papers/stack-mentorship-CHI-2018.pdf>
 - <https://meta.stackoverflow.com/questions/357198/mentorship-research-project-results-wrap-up>
 - Denae has a link to a podcast on this on her website and she lists study materials and a blog post on the work: <http://denaeford.me> (takeaway important to share out results in

multiple ways)

- Universities have many programs such as after school programs, summer camps (Peggy/Uvic)
- CMU also has a program that involves rebranding (Bogdan will post links) that has had a huge impact on gender diversity -- Note it took decades for things to happen -- we have to be patient! They have 50/50 composition in incoming classes. Still seeing some differentiation throughout the program... not as diverse at end of the program so perhaps room for improvement?
 - More details about what / how CMU changed:
<https://csd.cmu.edu/news/women-are-almost-half-carnegie-mellons-incoming-computer-science-undergraduates>
 - "Kicking Butt in Computer Science: Women in Computing at Carnegie Mellon University"
<https://resources.sei.cmu.edu/library/asset-view.cfm?assetid=517087>
 - The book describing all this in detail:
<https://www.amazon.com/Kicking-Butt-Computer-Science-University/dp/1457539276>
- HarveyMudd also changed course and is also seen as an example!
- (Anita) at OSU, we are trying out multiple freshman pathways ...so that those with different backgrounds can be catered too
- Idea for intervention: can we have a plugin that removes the harsh or sexist comments? (e.g., using sentiment analysis)
 - But the more common issues are the implicit comments made not overtly toxic (e.g., abrupt, and passive/aggressive)... VS code plugins do remove very harsh / swear words already
 - Also insults may need to be detected. (There are extensions to do some of these based on pattern patching or keywords)
- How to change culture
 - But, whose culture do we change to?
 - Do we need to have a culture exchange wrapper (babble fish)
- How to build community
 - Denae Ford Robinson 1:30 PM
 - <https://twitter.com/githubOCTO/status/1293242194590015488?s=20>
 - talk will be recorded and hosted here: <http://octo.github.com>

What interventions do we have ideas for that we want feedback on, or concerns?

- Anita (collaboration with NAU) is building a GitHub Plugin that is going to be inclusive of different cognitive styles (aka fix GenderInclusive bugs found by using GenderMag)

- Ask: how to get “real developers” to try it out and it not being just another lab study
- Make a connection to GitHub to get buy-in.

Discussion points:

- **[challenges] What kind of evidence do companies need to be convinced?**
 - Get their competitor to do first
 - How to publish when it takes decades?
 - Visiting faculty at Google is a good way to make this happen → internships
 - ...seems like personal connections makes the difference. Some of us who are not in tech hubs dont have as easy an access to company folks. If we organize D&I workshops like this that brings handful of "research open" companies and academics together, it would be great will give us ways to build relationships and build on the connections in our community
- Q: I came to know about few initiatives for encouraging girls to code. As female participation is very less in Github or open source, is there intervention to bring more girls to join OSS?
 - ASF has an initiative, Open Stack
 - Important to have guidelines (Anita is working on this from ASF research)
 - Linux has some programs , e.g.,
<https://blog.bitergia.com/2016/10/11/gender-diversity-analysis-of-the-linux-kernel-technical-contributions/>

Ideas to carry forward/share:

- Perhaps NSF funding for yearly workshops on this theme, involve students...
- Guidelines for how to reach companies to collaborate in terms of studying interventions, trying out ideas
- Since things take time, how can we work as a group on interventions and their empirical studies as part of a bigger group --
- Collect lessons learned from success stories (and also what didn't work)
- Advice to share on... definitely insist on Summer internships in companies to have impact and to learn real problems and challenges (R Studio is also starting to do research) Denae's thesis as a model for that :) (although this is a high bar :))
- Also of note people at companies move around which opens up opportunities for future research (people connections really matter)
- Perspective from Europe: Summer internships not that common, but in Europe you can contact the companies and suggest collaborations... maybe we need some of kind of matchmaking service for this... need to be careful though small companies they may not understand research but faculty/students then can help them
- Perhaps we can have a list of companies that do research internships and some guidelines for students... Especially beyond Microsoft Research and Google Research

Interested to follow up

Anita Sarma

Grischa Liebel
Mariam Guizani
Peggy Storey
Sayma Sultana
Bogdan Vasilescu

Understanding Challenges and Barriers

Breakout theme: Understanding Challenges and Barriers
9:00 - 10:30* am Pacific

Topics:

- Contexts to study,
- which methods to use,
- when do we know we have achieved our diversity and inclusion goals

Participants: please either add your name here if you participated in this Breakout

- Amber
- Paige
- Peggy
- Alannah Oleson
- Mariam Guizani
- Felipe Ebert
- Jocelyn Simmonds
- Martin Dybdal
- Ita Richardson
- Add your name here!

Discussion points:

Introductions

Areas we are interested in

- OSS
- Education

- Unconscious biases
- Human aspects of SWE
- Women in computing/trans students
- LGBT+
- Cognitive issues
- Blind
- Autistic developers

Challenges

- We end up studying the people that stay in the field, but how can we reach those that drop out of the field? (or who never entered the field in the first place)
 - One strategy to find these folks: snowballing, asking people if they know anyone who's dropped out
- Talking about negative experiences in CS can be uncomfortable, what questions should we ask or not ask? / phrasing is important
 - Provide context of why you're asking them about this, explain situation and give them agency to decline if uncomfortable
- Ensuring anonymity when talking to minorities
 - Strategy: Check the questions you're asking to see how much the data you collect anonymized participants (e.g. age + gender + department on a faculty survey => you know who I am now)
 - Make sure you actually need the demographic data you're collecting, not just collecting for the sake of it
 - Provide in paper why you chose to not analyze/collect data

How do we "know" we've met our D&I goals?

- Quantitative retention measures - e.g. if the percentage of women initially starting in the major/field is roughly the same as the percentage graduating
 - Challenge: small sample size
- Qualitative -- if there's a small sample, maybe you can interview them?
 - Challenge: students don't necessarily want to talk about their experiences
 - Which might indicate you haven't met your goals, if they aren't willing to share their experiences
 - And if they don't want to share qualitative insights, is it still alright to analyze their quant data? Issues of consent, etc.
 - Strategy: If <5, don't analyze quantitatively (anonymity). Ita: That's where qualitative can come in useful
- TL;DR: It's hard

How do we communicate/integrate diverse populations into work?

- Participatory research
- Co-design
- Communicate back to the community
- Challenges of where to publish

How to integrate into the community?

- Sit in on other researchers' processes (e.g. indigenous studies, anthropologists, sociologist, etc -- CS can learn a lot from the social sciences!)
- If you are part of the community, privilege your experience - utilize own thoughts, devising questions, etc.
- Rotate in new perspectives (to avoid the convergence to a single set of perspectives that can happen when folks are on a team together for extended periods of time)
- When you have findings/results, bring them back to the community in a format they want/that will further their goals (e.g. don't just throw a research paper draft at them and call it good)
- Avoid jargon

Doing D&I work -- How do we convince people it's important? Can be overlooked/downgraded

- Climate is changing -- more people are starting to talk about it, sentiment toward D&I is changing
- Is university the right place to do this? W/ focus on publishing, teaching, etc, sometimes diversity work isn't as valued
- Making a tradeoff -- choice to pursue D&I vs choice to do more traditional academic stuff, might not get you the highest h-index but the impact will be elsewhere
- Publishing: Finding a venue might be difficult, but you can also publish in broad array of different venues, leading to a nice diversity on your CV

Making connections w/ folks in other fields (social scientists, chemists, etc)

- Data science, HCI are good intros for people to come in to CS -- can see the applicability more obviously
- "Ideafest" -- talking to the community about research being done, can make connections there
- Challenge: bigger universities/institutions can be harder to break out of your bubble, so you have to make the concerted effort to reach out/go to other spaces
- For early stage PhD students in particular -- going to communities like this and making connections in the spaces that care about what you care about