

Debugging the Diversity Gap: (Re-)entry Initiatives in Emerging Technologies for Women

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ABSTRACT

Studies suggest women dropout of college and leave the workforce due to their family, finances, and military duty. However, these women interested in (re-)entering the tech fields can be the largest untapped talent pool that may fulfill the needs of the future workforce. In this session, five passionate women share their experiences with creating initiatives in emerging technologies for women.

AUDIENCE

The audience for this panel is academic and industry professionals who have interest in creating (re-)entry pathways for women in EmTech fields. Specifically, there are two intended audiences for this panel:

1. GHC attendees who are in academia (faculty, students, and researchers) and wants to investigate and explore what sort of re-entry pathways are available for women.
2. GHC attendees who are mid and advanced level industry professionals interested in exploring industry-academic partnership to create (re-)entry pathways for women.

It will also be appreciated by professionals both in academia and in industry at all levels that want to hear the initiatives of women who have created new pathways for (re-)entering the tech field through emerging technology skills. The audience will also learn about challenges faced by the women in obtaining these skills.

INTRODUCTION

The disparity of women in technology field is quite evident. Some areas within tech fields, such as Emerging Technology (EmTech), like cybersecurity, data science, mobile development, machine learning, AI, and cloud computing, are expected to experience increases in job

opportunities more quickly than traditional areas. Even though there has been a push towards bringing individuals of marginalized gender and race into tech, one untapped population that is less represented in tech field are women who are interested in (re-)entering the tech field.

While a variety of solutions are necessary to address the growing workforce needs in the EmTech industry and to attract and retain women in the profession, one novel intervention strategy is the (re-)entry program model. (Re-)entry programs of academia and returnship of industry help women from all backgrounds interested in EmTech to successfully acquire skills for employability in high demand in a short period of time.

Without incorporating (re-)entry initiatives as part of the overall academic program's curriculum, academia will never be able to graduate those who are workforce ready in EmTech fields. And without incorporating (re-)entry programs as part of the overall recruitment strategies in industry, organizations risk ignoring a valuable and largely unexplored source of talent. In addition, diversifying talent pipelines and increasing gender diversity not only addresses labor shortages, but it also fosters innovation and increases competitiveness in the global marketplace. This panel focuses on identifying the challenges for women to re-enter emerging technology professions and the role of industry-academic relationship in facilitating such initiatives in order to help the audience understand how to avail them. The panel represents a diverse array of ideas which will help shed light on the impact the existing and potential re-entry initiatives can have on enabling re-entry of women in EmTech profession.

CORE POINT OF CONTENTION

Each of the panelists come from a very different background and serves different communities. Although all participants agree on the need for (re-)entry pathways

for enabling women re-enter the technology workforce, and there is no “contention” between them regarding their beliefs and values, the participants each have different perspectives on how such a goal can be achieved. The moderator and panelists all have different approaches to their (re-)entry program model that may be traditional, nontraditional, and apprenticeship. As such, the views and experiences are diverse and varied.

PLAN OF ACTION

The planned time frame for this panel is for one hour.

- **5 mins - Opening Remarks** – the moderator and panelists will introduce themselves and each provide a brief overview of their (re-)entry initiative in EmTech fields.
- **20 mins - Moderator Questions for Panelists** – the moderator will ask a set of questions to the panelists regarding their experiences with re-entry pathways in EmTech fields. Panelist will share their stories and experiences to answer the questions.
- **15 mins – Moderator Questions for Audience** – The moderator will pose questions for the audience to answer about their experiences with challenges for women to re-enter emerging technology-based professions. Panelists can also contribute answers to these questions as appropriate.
- **15 mins – Audience Questions for Panelists** – The moderator will facilitate questions from the audience to each of the panelists. Ideally, we would use two methods of gathering questions: (1) an online poll to gather questions and (2) a mic in the room.
- **5 mins – Closing Remarks** – the moderator and panelists will summarize key points, provide contact and follow-up details, and wrap up the session.

The panelists each bring a different experience in enabling women to re-enter the EmTech professions: Dr. Billionniere, Dr. Marshall, Dr. Rahman and Dr. Seo are faculty members who can speak to the efforts that faculty members can make toward developing re-entry initiatives, formal and informal, for women. They can also shed lights on how intersectionality of women plays a role in more unique challenges as they navigate the re-entry routes. They will be critical in identifying what sort of industry relationship is lacking in academia to prepare the women interested in re-entering the technology professions. Ms. Forman and also Dr. Marshall are industry leaders who will talk about the existing re-entry programs in different companies, what sort of skills are required by those

programs and how women interested in re-entering can prepare for such opportunities.

The following are potential questions for the panelists in Segment #2:

- (To all panelists) What sort of (re-)entry programs are available across the EmTech fields?
- (To all panelists) Do the existing (re-)entry programs prioritize the inclusion of women?
- (To all panelists) Do traditional recruitment practices have hidden bias that work against the women's re-entry into the workforce?
- (To all panelists) What are the literacy and challenges facing the current workforce in obtaining emerging technology skills?
- (To faculty panelists) How important is the continuous learning in the EmTech fields to broaden the participation of women in the tech field?
- (To faculty panelists): What sort of academic re-entry initiatives are available for women interested in returning to EmTech profession?
- (To faculty panelists): Even though the academic re-entry initiatives are well-intentioned, in what ways do they fail and can industry play a role in making them more successful?
- (To industry panelists): How can companies or organizations help mitigate the challenges in order to make it easier to target low-income populations?
- (To industry panelists): How can the newer and smaller companies start re-entry programs like returnship across the EmTech fields?

Following are sample questions that the moderator may pose to the audience in Segment #3. Given that the majority of the audience is likely to be comprised of women, this will be an opportunity for audience members to share their own insights into what challenges they faced re-entering, how did they mitigate those challenges and what are their lessons learned so everyone can benefit from their experiences.

- In what ways have you benefited from re-entry programs in academia?
- In what ways have you benefited from returnship programs in industry?
- What sort of academic preparation helped to land a returnship/internship position?
- What are the challenges in landing a returnship/internship position?

- As an industry leader or change maker, what are the challenges that you face in creating a pipeline of women who are re-entering the EmTech profession?
- As a faculty member, what are the challenges that you face when it comes to prepare women to re-enter EmTech profession?

OUTCOMES/CONCLUSION

Attendees will leave with takeaways that include:

- Common challenges to (re-)enter EmTech professions
- Strategies for (re-)entering EmTech professions
- Existing (re-)entry programs in industry and academia
- Techniques to develop more symbiotic relationships between academia and industry to create successful (re-)entry pipelines
- Ways advocates can help support women re-enter and sustain in the EmTech fields

PARTICIPATION STATEMENT

All panelists and moderator have made a commitment to attend GHC 2020 and to participate in this panel session if it is accepted.

REFERENCES/BIBLIOGRAPHY

The moderator and panelists are seasoned and experienced speakers who have spoken at previous GHC and other conferences. They will share experiences and insights as they answer questions about exploring and developing re-entry initiatives for women.

- To the best of our knowledge there has not been a GHC panel specifically focused on exploring industry and academia role in creating (re-)entry initiatives for women in EmTech professions.
- This panel will not only include academic and industry professionals who are working to create and understand the challenges in creating (re-)entry pathways, but also incorporate the perspectives of a tech leader who had a career break and returned to workforce successfully.
- Finally, rather than focusing solely on the opinions of the panelists, this panel will allocate 25% of the time to asking attendees questions that will allow them to share their insights, in addition to 25% of the time for the attendees to pose questions to the panelists.

Here are some examples of their relevant works.

- Billionniere, E., and Rahman, F. (2020). Redesigning Learning Spaces and Credentials for 21st-Century Emerging Tech Careers. In Proceedings of the 31st

International Conference on Society for Information Technology and Teacher Education (SITE' 20).

- Billionniere, E., Rahman, F., Brown, Q., and Seo, H. (2020). Role of Academia to Create Re-entry Pathways in Computing. In Proceedings of the 5th IEEE International Conference on Research on Equity and Sustained Participation in Engineering, Computing, and Technology (RESPECT '20).
- Career Karma. (2020). State of the Bootcamp Market Report 2020. Retrieved from <https://careerkarma.com/blog/bootcamp-market-report-2020/>
- Rahman, F. (2020). Through the Looking-Glass: Barriers, Motivations, and Desires of Non-Traditional Students Learning Programming in an Online CS1 Course. In Proceedings of the 5th IEEE International Conference on Research on Equity and Sustained Participation in Engineering, Computing, and Technology (RESPECT '20).
- Gariba, P., Zou, A., Aktaran-Kalayci, T., Marshall, B., Su, L., Cramer, L. (April 2019). If AI is the Future, Where are the Women? (Panel), Women in Wireless SIG, Wireless Technology Forum.
- Marshall, B. (April 2019). A Taste of Data Science - Hands On Python Masterclass. blackcomputeHER Conference 2019.
- Marshall, B. (February 2019). Inclusivity and Data Science. DataCamp's DataFramed podcast. Interviewed by Hugo Bowne-Anderson. <https://www.datacamp.com/community/podcast/inclusivity-data-science>)
- Rahman, F., Billionniere, E., Brown, Q., and Quiroz Gates, A. (2020). RESET (Re-Enter STEM through Emerging Technology): Finding Re-Entry Pathways for Women. In Proceedings of the 51st ACM Technical Symposium on Computer Science Education (SIGCSE '20). doi.org/10.1145/3328778.3366963
- Seo, H., Erba, J., Altschwager, D., & Geana, M. (2019). Evidence-based digital literacy class for low-income African American older adults. *Journal of Applied Communication Research*, 47(2), 130-152.
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- Stone, T., Grafeld, B., Forman, T., van Huyse, J., and Austin, M. (2019). Innovating Talent Acquisition with Returnship. Grace Hopper Celebration (GHC' 19).

BIO

Moderator: Elodie Billionniere, Associate Professor at Miami Dade College, has helped her college secure over \$2.2 million in federal funding the past three years for STEM and emerging technology education programs as well as a collaborative high-tech learning hub with the aim of providing further opportunities to underrepresented populations to meet local and national workforce needs. With industry partners, Dr. Billionniere has been instrumental in the creation of new educational pathways in enterprise cloud computing, which are unique in the state of Florida. Her leadership and mentoring have been recognized on several occasions with the most recent national award 2019 Educational Leadership – College-Level Promotion of Education by Women of Color in STEM. She holds a Ph.D. in computer science from Arizona State University.

Farzana Rahman, Associate Professor at Syracuse University, is an expert in CS education who is passionate about broadening participation in computing, integrating best practices in undergraduate research, and exploring how different pedagogical practices can increase diversity in Computing, especially introductory computing courses. Over the last five years, Dr. Rahman's research has been funded federally and through industry to explore the impact of active learning pedagogy in undergraduate CS courses, effectiveness of online and inverted classrooms, broadening participation of women and underrepresented students in CS courses and programs and investigating effective re-entry strategies for returning women to re-enter the next generation emerging technology based academic and professional pathways. Dr. Farzana is the winner of the ABI sponsored NCWIT Extension Services (NCWIT ES-UP) grant, ABI Systers PIO (Pass-It-On) award, and NCWIT educator grant. She holds a Ph.D. in Computer Science from Marquette University.

Brandee Marshall, Founder and CEO of DataedX, is a computer science scholar, educator and strategist who remains curious about how data flows through digital environments. Her work focuses on the racial, gender and socioeconomic impact of data in technology, including designing data science pedagogy for marginalized communities and assessing the socio-technical implications of BlackTwitter. She participates in increasing data literacy and understanding, sharing best data practices and broadening participation in computing and data science through speaker and workshop leader

engagements. Dr. Marshall co-created and co-leads the blackcomputeHER Data Science Executives program which aims to increase knowledge of core data science concepts, awareness and interest in data science career pathways for tech Black women professionals at various stages in their careers. She holds a Ph.D. in computer science from Rensselaer Polytechnic Institute.

Hyunjin Seo, Associate Professor and Founding Director of Center for Digital Inclusion at the University of Kansas, is leading a National Science Foundation-funded program offering evidence-based technology education to women who were formerly incarcerated and are now restarting their lives outside the criminal justice system. Through this three-year project, her team is developing curriculum and online modules to broaden technology education to this and other underserved populations who are re-entering the tech workforce and education pipeline. In January 2014, the Association for Education in Journalism and Mass Communication named Dr. Seo an Emerging Scholar in recognition of her research on social media and social change. She holds a Ph.D. in Mass Communications from Syracuse University.

Tami Forman, Founding Executive Director of Path Forward, is building this organization from the ground up, working with donors, partners and participants to fulfill the organization's mission. Path Forward is a nonprofit organization that creates mid-career internship programs to ease the transition back to work for women (and men) after taking a break for raising children or other caregiving responsibilities. Path Forward trains HR teams and hiring managers on how to support these programs successfully and provides support to participants to make the experience successful. Ms. Forman spent a decade as a tech marketing executive with data solutions provider, Return Path. Before that she worked in book publishing at Simon & Schuster and Houghton Mifflin and held senior-level web editorial positions at iVillage and News Corporation. She is passionate about helping women achieve work/life integration so they can find career success and personal satisfaction.