

Invitation to Participate in Research on Learning Cultures of Blind Individuals Pursuing Science, Technology, Engineering, and Mathematics (STEM) Disciplines

A research team comprising blind and sighted scholars at the Pennsylvania State University is conducting data-science research on online interactions and informal learning patterns of blind people interested in STEM-related subjects. In this context, STEM stands for Science, Technology, Engineering, and Mathematics, and this is used for an overarching acronym to represent any relevant fields, including making, hacking, tinkering, designing, software/hardware programming, science, technology, engineering, math, physics, biology.

Since all the email communications of the National Federation of the Blind (NFB) mailing lists have been publicly archived online at <https://www.nfbnet.org/mailman/listinfo>, we would like to employ this valuable textual data created by the list members to discover new knowledge about how blind people pursuing STEM disciplines learn from and interact with each other.

More specifically, this research will include a large corpus of text data produced by the members of the following NFB mailing lists, which can be retrieved from the publicly downloadable archives:

- NFB-Science: http://nfbnet.org/pipermail/nfb-science_nfbnet.org/
- NFBCS: http://nfbnet.org/pipermail/nfbcs_nfbnet.org/
- Artists-Making-Art: http://nfbnet.org/pipermail/artists-making-art_nfbnet.org/
- BlindMath: http://nfbnet.org/pipermail/blindmath_nfbnet.org/

The expected value of this study is that we will get a better sense of the following topics from a evidence-driven data science perspective, which will in turn scientifically highlight where we are and what we need in terms of supporting blind STEM learners:

- The common STEM issues of blind learners that provoke discussion.
- The patterns of interaction between blind mentors and mentees in the STEM-related mailing lists.
- The strategies that are proposed or utilized by blind individuals pursuing STEM disciplines in the mailing lists.

As of May 21, 2019, use of this text corpus in the public domain is determined as a non-human subject research category by the Office for Research Protections at the Pennsylvania State University: Study #00012478.

Aggregated text-mining and exploratory data science approaches will be used to analyze shared cultural patterns of these mailing list archives after systematically removing personal information such as names, email addresses, and email signature lines, which means researchers will make sure not to disclose any of your personal information without your permission. However, in any event you still feel uncomfortable with some of your created text data being included in this research process, please feel free to contact JooYoung Seo, the principal investigator of this study, at jooyoung@psu.edu to ask for the removal of your data from the analysis and reporting procedures.

While all the email exchanges will remain anonymous, the researchers would like to invite some members of the listservs to an online interview to share their learning experiences of STEM subjects as being blind. This will allow researchers to rigorously validate the computational results captured through the large-scale text archives with more pronounced qualitative findings from the individuals.

Eligible participants for the online interview are those:

- self-identifying themselves as an individual who is blind or visually impaired;

- age 18 or older;
- having any learning experiences with Science, Technology, Engineering, and Mathematics (STEM) disciplines;
- and having a membership of any of the NFB mailing lists specified above (i.e., NFB-Science; NFBCS; Artists-Making-Art; BlindMath).

If you are interested in participating, or have a question, please contact the Principal Investigator of this study, JooYoung Seo (email: jooyoung@psu.edu). Please pass on this information to other suitable candidates who you think may be interested.

The researchers of this study will share any results that have benefitted from the NFB mailing lists with the target communities via email as the study progresses.

We appreciate the collective knowledge of the NFB and hope that our research can bring back meaningful results to the community in learning STEM subjects as being blind.

Sincerely,

JooYoung Seo (PI) and Dr. Gabriela T. Richard (co-PI)

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