

# Sonification Personae

The following personae are created to address these objectives:

- Accessibility for the visually impaired
- Explore datasets in frequency rather than spatial dimensions
- Multi-sensory perception of multi-parameter datasets
- Identify new correlations and patterns missed by current visual display techniques
- Complement existing visual displays
- Monitor data while looking at something else (background event-finding) <sup>1</sup>

## Personae

### Primary users:

#### OER

#### Anne:

Personal Goals:

- Explore new techniques and build up expertise in a new field
- Have fun when making a course material and also make it fun for her students

Practical Goals:

- Make her content available for a greater audience (accommodate students with different learning abilities)
- Ability to integrate the system/tool with any other common authoring program (no need to migrate all her previous content to a new platform)
- Ability to get different outputs from a data set
- Ability to customize output based on needs

Anne is 34 and teaches science in a private middle school in Chicago's central area. She lives by herself and sometimes looks after her nieces when her sister has a night shift. She really enjoys working with young kids and has been teaching in this school since she got graduated from the teacher's college.

Her school has switched to computerbased learning 2 years ago and all students are required to use computers to access course material and complete assignments. Although Anne had been using Microsoft Office programs such as Word and PowerPoint for many of her course materials, she experienced some difficulty using the school's computer based platform to author her course material. In the beginning, she had to spend several days to find her way around the program and get familiar with its different features and functions. After a few rounds of trial and error, she finally became comfortable using this new system. Now, she is trying to discover what else this system can offer. She feels that, although it takes more efforts to create a course content for computer based learning, the results are more rewarding, the content is more flexible and the content can be easily updated, cross referenced and shared with other educators and students.

The most challenging part of her job is to teach science concepts that are not tangible and the students have never experienced them in real life. In these cases, she tries to link these concepts to games, cartoons or any other thing that kids are more familiar with. Anne is also actively involved with the teachers' online community and tries to stay up-to-date with latest teaching trends and technologies. She'd like to be able to use this computerized platform to easily customize her course material for each student based on their learning abilities, attention span and interests.

#### Steve

Personal Goals:

- Find a broader audience for his course
- Expand his teaching tools
- Experience new ways of teaching

Practical Goals:

- Be more efficient creating accessible content
- Easily get different outputs for his course content

Steve is 44 and teaches Statistics at Georgetown university in Washington D.C. He lives very close to the campus with his wife and two young children and usually walks to school. Steve is passionate about technology and has always pioneered trying out new techniques to keep his courses relevant to the time. He is the go to person in his faculty regarding smart gadgets that pop up in the market and he was the first person who installed Nest in his house in the Georgetown Statistics department. He is also an advocate for making education available out of the university boundaries and accessible for masses. That is why he has been holding public workshops regarding statistics in community colleges or

providing annual statistic reports for several local NGOs. He is also cooperating with Coursera to build a free and open introductory course to Statistics. Currently, Steve and his graduate students are in the process of building the online course and converting available material to a format that is suitable for a variety of students who may participate in that course.

One of the problems he has experienced when presenting Statistics outside of school was the great variety amongst his audience. They had different educational backgrounds, different learning abilities, various age groups and even spoke different languages. Thus, making his content accessible for all has been a challenge and required extensive modifications for each presentation. He has had similar difficulties building the online course. One of his biggest issues was converting the flat images of charts and diagrams to something interactive. Sometimes he has to rebuild an entire chart in separate pieces to make it interactive, which takes a lot of time and efforts. So far he has had no luck finding an efficient way to export his data sets and get different accessible outputs.

## Secondary users:

### Research

#### Paul:

Personal Goals:

- Be able to complete his tasks
- Be a reliable team member (missed patterns or wrong analysis)

Practical Goals:

- Consume big data more effectively
- Increase accuracy of his analysis
- Identify patterns that are not identifiable in visual displays

Paul is a PhD candidate and studies bio-informatics at Ohio State University. For his final project, he is working with a team of bio-informatic scientists across the nation to track disease trends via collecting patients' demographic and geographic data as well as environmental influences such as temperature, pollution level, water qualities, etc. There are many different parameters being collected at once. Although Paul and his team have tried using different visualization tools and techniques to make these parameters distinguishable, sometimes it is too difficult to identify important patterns. To be able to manage collected data, Paul sometimes studies an isolated set of parameters and then compare the results to other sets. However, this has cost him not being able to see the big picture and identify accurate patterns. The inability to analyze all parameters at once frustrates Paul. He hopes to find other methods to complement his process and helps him make connection between those isolated data chunks and the larger data set.

### Background Event Finding

#### Sarah:

Personal Goals:

- Achieving more, Being successful

Practical Goals:

- Better Performance

Sarah is 17, and she is in the Canadian national rowing team. Currently, she is camping with her team in southern Florida to go through a three week training program for Rio 2016. Her focus is to harmonize her rowing style and timing with her teammates particularly for dual and quad rowing. She tries to record her teammates timing and movements with her iPhone every time they practice and analyze it during their breaks. Based on what she finds, she tries to adjust her movements and improve her performance. Although this strategy has been helpful, in Sarah's mind it has not been very effective. She believes monitoring her teammates while they are all in practice could be more effective. In her opinion, that would help her correct her motions on the spot and build up the required muscle memory. She has discussed her idea with her trainer and they are searching for a tool or application that gets a live feed of each team member's activity and plays it in the background when they are practicing. The coach can also later use that information to spot where inconsistencies are and how the each player can be improved.

### Multi-Modal Data Presentation

#### Kira:

Personal Goals:

- Create one of a kind piece

Practical Goals:

- Satisfy Project Requirements
- Showcase work in several places
- Make work accessible for more people

Kira is 26, a graduate student in multimedia and digital communication at Denver University. For her thesis project, she is working on an interactive data visualization that showcases the spread of wealth across United States based on age, gender, ethnicity and education. Her final work will be presented in the university's graduate show as well as several private and public galleries. She is very excited about this project and spends most of her time in Processing to make it work. She is constantly seeking feedback from her classmates, advisers and the Processing online community to improve the project. Her adviser believes that her project contains valuable information that can be useful for many people in different areas, thus, it should go beyond just being visual and turn into a multi-modal piece. Based on this feedback, Kira is trying out auditory and tactile sensory outputs and testing how they can be integrated into her project.

**References:**

1. <https://smartech.gatech.edu/bitstream/handle/1853/49860/SchertenleibBarrass2010.pdf>