ENSEMBLE SONIFICATION OF TEMPORAL DATA
MUSIC 153D / COMM 153D
WINTER 2024

Meeting Days & Times:
Wednesday & Friday
5:30PM – 7:20PM Pacific Time
Winter Quarter 01/08/2024 – 03/15/2024

Location: Studio 40 in Building 120 (McClatchy Hall)

Instructors: Prof. Chris Chafe and Prof. Nilàm Ram
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Course Description:
An ensemble course with research components for making data-driven music. Improvised and composed pieces make use of large, time-based data sets chronicling humans' digital-life and real-life experiences, and explore how temporal data can be transformed into live musical performances. Data sets will include the Human Screenome Project and the music will go where it goes following the group's ears and instincts. A series of workshops with guest musicians will continue throughout the year and group members will be able to take part beyond the course.

Learning Goals:
In this course we develop and refine a new research model centered on collaborative "*ensemble sonification"* of temporal data (a group putting sound into data). Our goal is to form a collaborative space where scientists and musicians come together to explore what kinds of knowledge emerge when we engage in live performance of and listening to our data. We purposively reach across fields – merging computation-based data analysis expertise with experience-based musicianship – to obtain new understanding of how and why we, as individuals and as a collective of researchers/performers, approach data and more generally, our history, our work, and our world.

Musicians, artists, historians, designers, and data analysts share a common goal – we all seek to find meaning in data – whether through musical scores or numerical arrays. In this course, we engage purposeful exchange among musicians and data analysts – working together to simultaneously perform and display data in visual and sonic form. Along the way we will enrich and shape both listeners sonic experience and what can be learned data.

In the social sciences, our data collection procedures filter individuals' real-world lived experiences through observational and survey research paradigms that extract specific aspects of those lived experiences and convert them into numbers and letters that are then collected into matrices and analyzed using mathematical machinery to obtain results that inform formulation or testing of scientific theory. We all do it in slightly different ways, learning

things about the world and sometimes using that knowledge to make individuals' real-world lived experiences better. Along the way, we often produce data visualizations that depict one or more interesting features of the data. Temporal data, for example, are often displayed using line graphs – with time proceeding along the horizontal axis and the numerical quantifications of human experience depicted using lines and points that vary in size, shape, and color.

In the musical arts, performers translate musical scores – a special kind of graph with time proceeding along the horizontal axis and specific sonic features traditionally represented using a specialized collection of circles and lines that vary in shape and size – into sonic form that conveys and produces real-world lived experience for listeners. We all put sound into (i.e., "ensonify") the notes on the page in slightly different ways. Really good musicians imbue their performance of a composer's notations on the page with musicality that conveys some deeper meaning of the human experience. When done well, funky grooves compel us to dance and the blues conjure tears of heartbreak.

Threading together these two practices, we engage in a collaborative exchange where social science data that distilled lived human experience into a numeric/text format are re-represented as data visualizations that can serve as musical scores that can then be "ensonified" with musicality that infuses human experience back into the data during live performance. We expect that *new kinds of meaning are obtained through the collaborative listening induced by the creative processes evoked when data analysts and musicians produce sound (and silence) together.* This course develops and explores this possibility!

Through the quarter we will engage in collaborative "performing and listening" of data – developing new projects/compositions that widen the palette of meanings that are discovered in data and musical form. We will initiate and refine a collaborative process for creation and performance/display of new musical scores made from longitudinal data. In the middle of the quarter guest artists, percussion duo Robyn Schulkowsky & Joey Baron – world renowned performers of contemporary classical and jazz music, will share their Playing the Archive project and work with students the class

Course Requirements:
This course is designed for students interested in how creative processes and data-based scientific pursuits can be integrated into practice and performance. We are particularly interested in exploring the "ensemble" aspect of data sonification and how the real-time exchanges of ideas and expertise contribute to discovery of new data-sound pairings. Particular expertise or prior experience with music or data is not required. Please talk to us about your interest and skills and we will develop a strategy that works for you.

Course Format:
Interacting with each other – as an ensemble – is a key part of our learning and discovery process. Generally, our Wednesday meetings will focus on programming, analysis, and preparation of materials/preparations; and our Friday meetings will focus on live in-the-moment improvisations with data and sounds, refinement of compositions with the ensemble, and rehearsal/performance. Our meetings are viewed as rich opportunities to gain familiarity with concepts and material, discover new materials for composition and analysis, as well as a

chance to think and try – as a group – about how music and data intersect. You are strongly encouraged to bring musical ideas and data pertinent to your own interests to class for discussion and critique; and to help your peers figure out how to work with and make sense of their ideas and data. Some weeks, you will be expected to present progress on and push forward assignments/projects. Other weeks, these sessions are meant as 'open conversation/improvisation time' where you and your peers/instructors implement the material being covered and discovered, address questions or concerns, and talk about innovations. This is an ensemble class, so participation in the course community is imperative.

Through collaborative discussion/playing our data analysts work with our musicians to create time-based data visualizations that represent interesting features of the data and can be read as musical scores. In parallel, our musicians work with our data analysts to create sound palettes (musical motifs) that can be paired with specific features of the data being represented in the data visualizations. Through the collaborative exchange the ensemble refines the conceptual articulations and aesthetics of the visual and sonic elements being matched to the content of each data set.

The ensemble rehearses the material, discovering and layering in ideas that emerge as the musicians learn the data and the data analysts learn to musical mappings. Key is the mutual participation process, where all parties engage with both the data and the sound. Coaching from expert musicians and faculty propels excellence in practice.

The group will deliver a public showing of the resulting ensonifications of data – live performance and live listening. Mixing lecture-type and concert-type formats, we provide the audience with both a scientific and experiential understanding of data – and an inside view of the process through which meaning was discovered through the collaborative listening process.

Student Evaluation:
Evaluation and course grades will be based on participation in the discovery process, creation of new ensemble-based compositions, and presentation of those compositions in a public performance.

Course Website:
Materials for the course will be posted on CCRMA website and/or https://thechangelab.stanford.edu/.

Note:
This course is a work-in-progress. Your patience and contributions to its construction are most appreciated. We shall constantly update as new ideas emerge. The instructors reserve the right to modify the course syllabus in conjunction with the students and will make formal announcements of these changes.

MUSIC 153B – COMM 153B ENSEMBLE SONIFICATION OF TEMPORAL DATA

EMERGING WINTER 2024 SCHEDULE

Date	Day	Topic	Visiting Artists
Week 1			
10-Jan	W	**Welcome**	
12-Jan	F	**Intro w/ Instruments**	
Week 2			
17-Jan	W	**Temporal Data & Data Viz**	
19-Jan	F	**Scores & Improvisation**	
21-Jan	S	**Attend Joey Baron Performance @SFJazz**	
Week 3			
24-Jan	W	**Participation in Data Construction**	
26-Jan	F	**8 Objects: Participatory Performance**	**w/ Baron & Schulkowsky**
Week 4			
31-Jan	W	**Sound & Silence**	
2-Feb	F	**Stress Stencils for Ensemble**	**w/ Baron & Schulkowsky**
Week 5			
7-Feb	W	**Stochastic Data & Improvisation**	
9-Feb	F	**Showing I**	**w/ Baron & Schulkowsky**
Week 6			
14-Feb	W	**Sounds and Data Palettes**	
16-Feb	F	**Showing II**	**w/ Baron & Schulkowsky**
Week 7			
21-Feb	W		
23-Feb	F	**Showing III**	**w/ Baron & Schulkowsky**
Week 8			
28-Feb	W	**Data and Sound Selection**	
1-Mar	F	**Refinement Notes**	
Week 9			
6-Mar	W	**Integrating Sonification & Education**	
8-Mar	F	**Rehearsal**	
Week 10			
13-Mar	W	**Rehearsal**	
15-Mar	F	**Public Performance**	
Finals			
20-Mar	W	**Finals Week (Projects Due)**	
	F		**FINALE**

Student Responsibilities and Class Conduct

1. Students are responsible for attending class, taking notes, and obtaining other materials provided by the instructor, taking exams, and completing assignments as scheduled by the instructor.
    a. Requests for taking exams or submitting assignments after the due dates require documentation of events such as illness, family emergency or a university sanctioned activity.
    b. Conflicts with dates on which examinations or assignments are scheduled must be discussed with the instructor *prior* to the date of the exam or assignment.
2. Students are responsible for keeping track of changes in the course syllabus made by the instructor throughout the quarter.
3. Students are responsible for monitoring their grades.
4. Students must contact the instructor as soon as possible if they anticipate missing multiple classes due to events such as chronic illnesses, travel related to team sports, or other university activities. The instructor will determine the minimal attendance and participation required in order to meet course responsibilities.
5. Behaviors that disrupt other students' learning are not acceptable (e.g., arriving consistently late for class; phone use, reading non-course related materials, or social conversation during class), and will be addressed by the instructor.

Academic Integrity

Academic integrity is the pursuit of scholarly activity in an open, honest and responsible manner. Academic integrity is a basic guiding principle for all academic activity, and all members of our community are expected to act in accordance with this principle. The Stanford community strives to create meaningful change both on campus and in the world. A commitment to integrity permeates all aspects of campus life. The Fundamental Standard and the Honor Code articulate values that unite us and outline the responsibilities that attend the great privilege of being at Stanford. Every member of the Stanford community plays an integral role in espousing these ideals and sustaining our culture of excellence.

The Honor Code is the university's statement on academic integrity. It articulates university expectations of students and faculty in establishing and maintaining academic, intellectual, and creative integrity. It is expected that you and I will follow Stanford's Honor Code in all matters relating to this online course. You are encouraged to virtually meet and exchange ideas with your classmates while studying and working on homework assignments, but you are individually responsible for your own work and for understanding the material. Compromising your academic integrity may lead to serious consequences, including (but not limited to) one or more of the following: failure of the assignment, failure of the course, disciplinary probation, suspension from the university, or dismissal from the university. Please review Stanford's Honor Code, supplementary information from the Office of Community Standards, and documentation and citation resources from the Hume Center for Writing and Speaking. When in doubt, talk to me and we'll figure it out.

Course Privacy

As noted in the University's recording and broadcasting courses policy, students may not audio or video record class meetings without permission from the instructor (and guest speakers, when applicable). If the instructor grants permission or if the teaching team posts videos themselves, students may keep recordings only for personal use and may not post recordings on the Internet, or otherwise distribute them. These policies protect the privacy rights of instructors and students, and the intellectual property and other rights of the university. Students who need lectures recorded for the purposes of an academic accommodation should contact the Office of Accessible Education (OAE).

Academic Accommodations

Students who may need an academic accommodation based on the impact of a disability must initiate the request with the Office of Accessible Education (OAE). Professional staff will evaluate the request with required documentation, recommend reasonable accommodations, and prepare an Accommodation Letter for faculty dated in the current quarter in which the request is being made. Students should contact the OAE as soon as possible since timely notice is needed to coordinate accommodations. The OAE is located at 563 Salvatierra Walk (phone: 650-723-1066).

Even if you do not have a documented disability, staff at the Stanford Center for Teaching and Learning can meet with you individually and help you identify your learning strengths, as well as areas for growth, and connect you to available support.

Respect for Diversity and Commitment to Inclusion

It is our intent that students from all diverse backgrounds, perspectives, and situations be well served by this course, that students' learning needs be addressed both in and out of class, and that the diversity that we all bring to this class be viewed as a resource, strength and benefit. It is our intent to present materials and activities that are respectful of diversity in all its forms. Please note that in some cases we use examples that purposively challenge norms and expectations – with intent that the issues raised are discussed openly so that we gain awareness of implicit standards and can use that awareness to improve ourselves and how science is done. As we go, please let us know ways to improve the effectiveness of the course for you personally or for other students or groups.

All people have the right to be addressed and referred to in accordance with their personal identity. In this class, we will have the chance to indicate the name that we prefer to be called and, if we choose, to identify pronouns with which we would like to be addressed. I will do my best to address and refer to all students accordingly and support your peers in doing so as well.

Commitment to Student Wellness

All of us face personal challenges or have psychological needs that may interfere with our academic progress, social development, or emotional wellbeing. Stanford is committed to advancing the mental health and well-being of its students and offers a variety of confidential services to help you through difficult times, including individual and group counseling, crisis intervention, consultations, online chats, and mental health screenings. These services are provided by staff who welcome all students and embrace a philosophy respectful of clients' cultural and religious backgrounds, and sensitive to differences in race, ability, gender identity and sexual orientation. If you or someone you know is feeling overwhelmed, depressed, and/or in need of support, services are available. You can learn more about the broad range of confidential mental health services available on campus through CAPS.

For more information, see also:

- 10 Strategies for Promoting Student Flourishing, Center for Teaching and Learning
- Well-Being services, Vaden Health Services
- Red Folder, Student Affairs

Current Circumstances

We are each moving through unique circumstances, likely trying to juggle a variety of commitments, emotions and physical and mental states. I appreciate your participation in this course, and will do everything I can to support you. The course is purposively structured to accommodate variation in when and how you complete your coursework. If there are additional ways we can support you in the course, please reach out to me. Without requesting or expecting details of your situation, I will do whatever I can to ensure your course learning is productive.

There are also campus resources, such as virtual study halls, learning accommodations, learner variability support, well-being coaches, counselors, academic skills coaches, Hume Center writing tutors, the FLI opportunity fund, assistance with home internet access, and community direct aid requests, for broader needs you might have. For information about specific policies and procedures for Covid please see COVID Guidance.