

FEAST: Faculty Engineering/Arts Student Teams at the University of Michigan

NEW EXEMPLARS FOR BEST PRACTICES IN ARTS INTEGRATION:
AN A2RU & ICFAD COLLABORATIVE WEBINAR

DEB MEXICOTTE
MANAGING DIRECTOR, ARTSENGINE

4/13/2022

ArtsEngine's Mission

- ▶ *ArtsEngine's mission is to deepen and enrich the Michigan experience by providing a framework in which curiosity, creativity, collaboration, and passion are engaged through interdisciplinary teaching, learning, research, and community. We do this by promoting, expanding, and enhancing programs and initiatives through which students and faculty develop as interdisciplinary thinkers, outcome-driven makers, and collaborative practitioners across the arts, design, engineering, information sciences and technology.*

ArtsEngine at University of Michigan

- ▶ Funded through a combination of discretionary and designated sources (schools and colleges, Provost office, co-sponsoring units, tuition sharing).
- ▶ Programs and Initiatives
 - ▶ Living ArtsEngine (Michigan living-learning community)
 - ▶ Funding Programs (MicroGrants, AiiR Faculty and Graduate Research Grants)
 - ▶ UARTS Curricular Effort (Creative Process, FEAST)
 - ▶ Special Programs, Projects, Co-sponsorships (Art/Sci Student Residencies, Makeathon, Science as Art)
 - ▶ Collaboration Matching and Workshops (Find A Collaborator)
 - ▶ Interdisciplinary Project Documentation (Project Gallery)

artsengine.umich.edu

ArtsEngine at University of Michigan

- ▶ Created in 2006 (Arts on Earth) by the consortium of Deans from the Stamps School of Art & Design, A. Alfred Taubman College of Architecture and Urban Planning, School of Music, Theatre & Dance and the College of Engineering (School of Information joined 2017), it was envisioned as the interdisciplinary initiative focused on supporting the integration of the arts, engineering, design, and technology on the North Campus of the University of Michigan for students and faculty.
- ▶ 2010 Michigan Meeting - "Art and art-making in the research university" laid the foundation for the Alliance for the Arts in Research Universities (a2ru).
- ▶ Two major Mellon grants awarded to look at the impact and practice of arts integration – what is it, how do you do it, why does it matter?

ArtsEngine Curricular Development

- ▶ ArtsEngine (renamed in 2009), developed living learning community Living ArtsEngine, approved for UARTS (University Arts) course prefix and established corresponding Curriculum Council.
- ▶ Expectation of a suite of UARTS curricular offerings, including an eventual certificate or minor in interdisciplinary design and collaboration.
 - ▶ Two foundational courses and occasional one-off efforts
 - ▶ Difficulty in developing co-taught or interdisciplinary coursework
 - ▶ Limited range of opportunities for student curricular participation
- ▶ First appointment of 3-year Faculty Director in 2019.
 - ▶ Gregory Wakefield, Associate Professor, CoE and SMTD

What is FEAST?

Faculty Engineering/Arts Student Teams

Launched in Fall 2020, FEAST is a suite of faculty-led interdisciplinary student research teams that are selected through a matched application process, and then complete at least a two-semester for-credit “apprenticeship” working on a directed research agenda. Students also engage with centralized learning modules and assignments, and complete pre-post participation surveys to evaluate learning outcomes. With faculty consent, students may opt for continuing with the team beyond the initial two semester commitment and can request course substitution credit on a case-by-case basis. Both undergraduate and graduate students may participate in the FEAST program.

FEAST also opens up avenues for team research, creative practice, and funding support with access to a broader range of skills and experience not generally available to faculty within their specific schools and colleges, and especially for those in arts and design disciplines.

Partnering with the Multidisciplinary Design Program (MDP) in the College of Engineering

- ▶ MDP had established recruiting and team building models for their industry sponsored and engineering student research teams (FRST) and had relationships with and access to a broad range of academic advisors and programs. This is their process expanded to include faculty mentors from outside Engineering.
- ▶ Shared reporting structure through Associate Dean in the College of Engineering, part of the Immersed initiative.
- ▶ New Faculty Director was a previous faculty advisor to MDP.
- ▶ Initial groundwork Winter 2020 led to program launch Fall 2020 (because new efforts are best undertaken during the early months of a global pandemic).

Faculty Recruitment

- ▶ **Targeted outreach/invitation to ~50-60 faculty members Spring/Summer 2020**
 - ▶ Faculty from the five supporting schools and colleges for whom an interdisciplinary research/creative practice team was required or desired (including Engineering).
 - ▶ ArtsEngine Faculty Liaisons group
 - ▶ Faculty previously funded through ArtsEngine
 - ▶ Faculty with demonstrated skills (or willingness) to work with a student research team (recommendation)
 - ▶ Faculty who were interdisciplinary in their research/teaching approaches (cold calls)
- ▶ **Projects needed an expected horizon of at least 18-24 months.**
- ▶ **Project descriptions and roles were developed in consultation.**

Project Set-Up: Overview



SONIFICATION OF SLEEP DATA

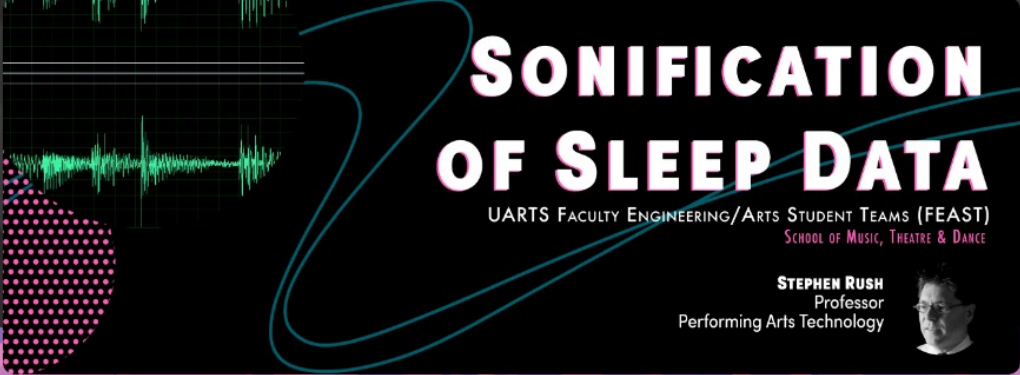
UARTS FACULTY ENGINEERING/ARTS STUDENT TEAMS (FEAST)
SCHOOL OF MUSIC, THEATRE & DANCE

STEPHEN RUSH
Professor
Performing Arts Technology



Overview	Student Skills	Faculty	More Information
<p>Working with doctors at the Mayo Clinic Center for Sleep Medicine, this UARTS Faculty Engineering/Arts Student Team (FEAST) will explore the possibilities of creating techno tracks from up to, at least, four data points from raw polysomnogram data (EEG/Pulse/Oxygenation). The goal is to convert sleep data into interesting music to enable sleep diagnostics that would be accurate and fun—for the world. Sonification data has already been shown to increase the speed and accuracy of interpretation of medical data and we aim to expand that principle to the world of sleep diagnostics.</p> <p>Introductory experiments, working with CoE alumnus Greg Syrjala (from ORMEC in Rochester, NY) have been conducted, in collaboration with Dr. Kara DuPuy-McCauley at the Mayo Clinic. Kara is an alumnus of the School of Music, Theatre & Dance, and had an established career in Punk band before returning to Michigan to complete her studies in Medicine. It is her life's vision to create an "audio approach" for sleep study data and using MAX/MSP, our team has already concatenated EEG, EKG, EMG and RespNatal data using EDF formatted files introduced into MAX/MSP and Ableton live. The results sounded like "glitch" meets "Brian Eno/ambient music." The goal is to create interested music with data that is inherently rather dull and does not change much, but highlight anomalies, such as snoring (or worse), in order to diagnose sleep patients more accurately and efficiently. Sonification of data has been utilized for decades in the medical field but although we can hear the representation of patient data rather ubiquitously in the operating room or intensive care unit (think beeps from EKG and ventilators), sonification as a field of medical research is relatively unexplored in most other specialties.</p> <p>Meeting Details Tuesdays, 4:00pm Modality: In-person (interested in the project but unable to be on campus? Contact us to inquire!)</p>			


Project Set-Up: Student Roles



SONIFICATION OF SLEEP DATA

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Overview	Student Skills	Faculty	More Information
<p>Students apply to a specific role on team as follows:</p> <p>Sonification & Music Synthesis (2 Students) Preferred Skills: MAX / MSP and Ableton Live expertise required, willingness to learn about techno / ambient music (Eno and Detroit) Likely Majors/Minors: COMP, PAT, EE, CE, CS, BME</p> <p>Data Analysis (2 Students) Preferred Skills: Ability to review large files and cull for exceptions / bugs / anomalies, app development skills, knowledge of Ableton Live, may involve building software synths / modules Likely Majors/Minors: CS, SI, STATS, DATA</p> <p>Software App Development (2 Students) Preferred Skills: UX / UI characterization, application development, knowledge of Ableton Live Likely Majors/Minors: CS, SI</p>			

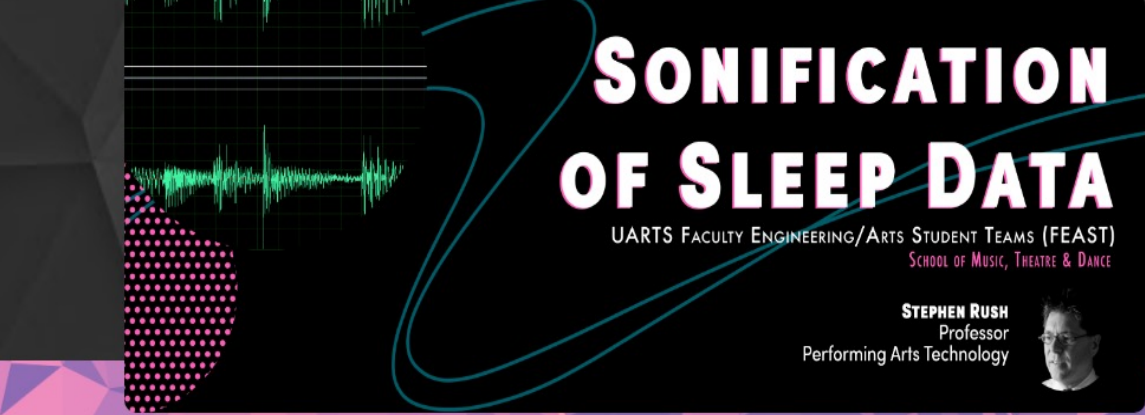
Project Set-Up

Faculty Bio:



Overview	Student Skills	Faculty	More Information
<h3>Faculty Project Lead</h3> <div><p>Stephen Rush has had premieres on five continents and has released many publications of his musical compositions. He has written six operas, over 50 works for dance, chamber and electronic works, concertos, and three symphonies, performed by the Detroit Symphony and the Warsaw National Symphony. He has authored two books, including Free Jazz, Harmolodics and Ornette Coleman. Rush has recordings on Nessa, Pi, Innova, ESP-Disk', Equilibrium, Deep Listening, Centaur, MMC, RogueArts (Paris), Eroica, Summit, and CALA Records (with the New York Philharmonic Chamber Musicians).</p><p>Rush is a professor of music at the University of Michigan, where he founded the Digital Music Ensemble (DME) which he has directed for 25 years. DME has worked with Pauline Oliveros, Elliott Sharp, Alvin Lucier, and Robert Ashley, and premiered works by John Cage, Philip Glass, and La Monte Young.</p><p>He collaborates with virtually every ensemble at SMTD, having written scores for the University Symphony, University Choir, Trombone Ensemble, as well over 100 scores for dance.</p><p>Rush has also taken over 130 students to India every summer since 2005, where they study music, dance, and yoga for one month. There they study, one-on-one, with gurus who are deeply committed to the cultural traditions of India.</p><p>Rush has over 30 CDs released and has performed or recorded with Roscoe Mitchell, Henry Grimes, Elliott Sharp, Steve Swell, Eugene Chadbourne, Peter Kowald, and Art Ensemble of Chicago. He also tours and records with his electronic psychedelic improvisation band, Crystal Mooncone.</p><p>Rush is deeply invested in "Installation Art", with current works in collaboration with Michael Gould and Nobel Prize-winning physicist Henry Pollack, World Without Ice, as well as Jeweled Net of the Vast Invisible in collaboration with scientists at the Fermi Lab.</p></div>			


Project Set-Up: Add'l Info



**SONIFICATION
OF SLEEP DATA**

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Overview	Student Skills	Faculty	More Information
<p>Students: 6</p> <p>Likely Majors/Minors: BME, CE, COMP, CS, DATA, EE, PAT, SI, STATS</p> <p>Meeting Details: Tuesdays, 4:00pm, In-person (interested in the project but unable to be on campus? Contact us to inquire!)</p> <p>Summer Opportunity: Summer research fellowships may be available for qualifying students.</p> <p>Citizenship Requirements: This project is open to all students on campus.</p> <p>IP/NDA: Students who successfully match to this project team will be required to sign an Intellectual Property (IP) Agreement prior to participation.</p> <p>Course Substitutions: CoE Honors</p>			

12 Initial FEAST 2021 Projects (14 recruited)

~70 Students, 14 faculty

- ▶ Sonification of Sleep Data, Stephen Rush, SMTD
- ▶ Visualizing Telematic Music, Michael Gurevich, John Granzow, Matt Albert, SMTD
- ▶ Accessing Korean Art Song, Matthew Thompson, SMTD
- ▶ The Telemann Chorale Project, Somangsh Mukherji, SMTD
- ▶ Pre-Figural Structures for Social Connection, Nick Tobier, A&D
- ▶ Experiments in Animation and Storytelling, Endi Pokovic, A&D
- ▶ Nepalese Ceramic Water Filter, Joseph Trumpey, A&D
- ▶ Space Weather Sensor Packages, Mark Moldwin, ENGR
- ▶ Highly Useable and Rapidly-Learnable Programmable Languages, Mark Guzdial, ENGR
- ▶ LuCelegans: The Interactive Worm Nervous System, Eleni Gourgou, ENGR
- ▶ Spatial Ideas in Storytelling through Immersive Technologies, Dawn Gilpin, ARCH
- ▶ Design For Participation, Vadim Besprozvany, UMSI

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FEAS...▲

Major/Minor ▼

Interests ▼

Course Substitutions ▼

Citizenship ▼

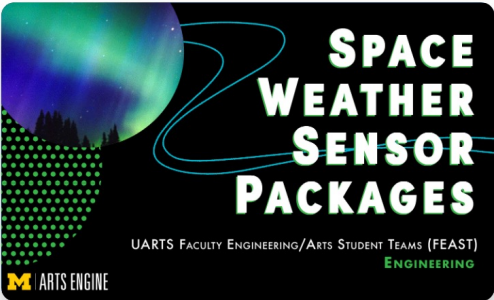
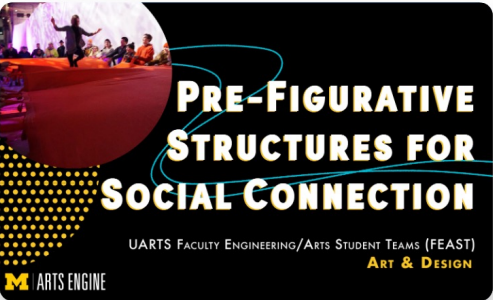
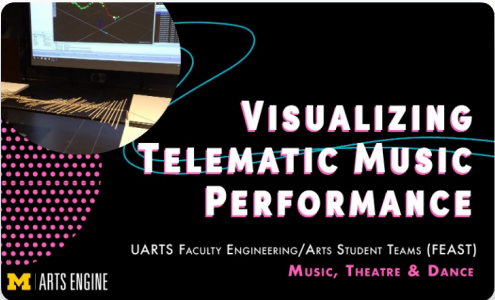
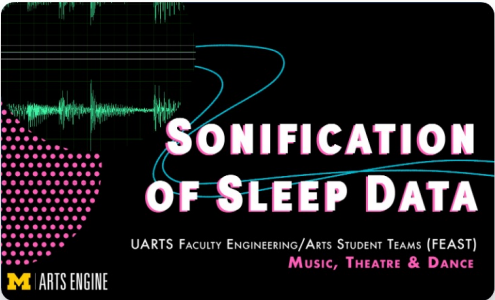
Mode ▼

Search Projects

Clear

Search

FEAST Teams (19)



FEAS...▲

Major/Minor ▾

Interests ▾

Course Substitutions ▾

Citizenship ▾

Mode ▾

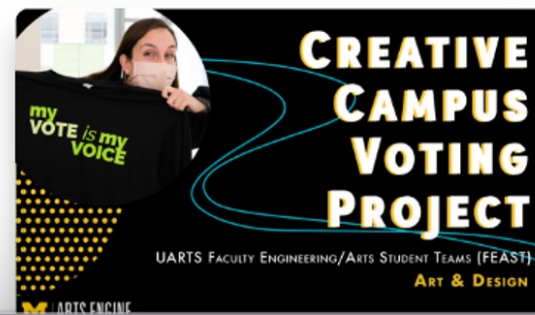
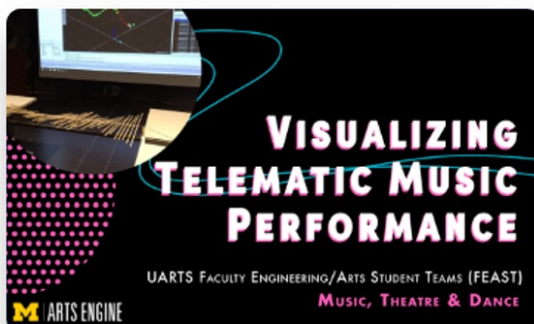
Search Projects 🔍

- Clear

Search

FEAST Teams (19)

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[Learn More](#)

Recruitment

- ▶ **Project Finalization (August)**
- ▶ **Marketing (August-October)**
 - ▶ Poster Sessions, flyers, print brochures
 - ▶ Digital and social media, e-newsletters, websites
 - ▶ Info Fair with faculty participation
 - ▶ MDP/FEAST Information Sessions
 - ▶ Academic and Student Advisor Outreach
 - ▶ Direct Faculty Recruiting
 - ▶ Word-of-Mouth
- ▶ **Application (late October)**
 - ▶ Open to graduate and undergraduate students
 - ▶ Includes optional video interview, team specific questions
- ▶ **Matched Selection (Nov)**
 - ▶ Similar to Med School matching (matched for greatest mutual happiness)
 - ▶ Applicants rank projects in order of preference, and in all roles they want to be considered
 - ▶ May include mix of sponsored projects, engineering research teams
 - ▶ Faculty then also receive and rank applicants (including '0' rank for "not qualified")
 - ▶ The student rankings are blind to the faculty - and vice versa
- ▶ **Accept/Decline (Nov/Dec)**
 - ▶ Applicants match to only one team – accept or exit program for this year (Nov/Dec)
- ▶ **Teams Commence (Jan)**
 - ▶ Team Collaboration module
 - ▶ Pre-Survey

Course Details

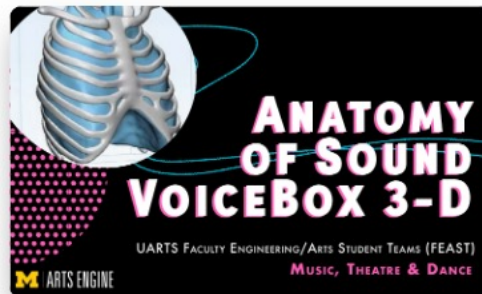
- ▶ **Students enter at level described by current transcript**
 - ▶ UARTS 260, 360, 460, 560
 - ▶ Faculty/project sections
 - ▶ Course Substitution
 - ▶ Case-by-case approval (i.e ENGR Honors)
- ▶ **Initial 2 semester, 2 credit/semester commitment**
 - ▶ Y grade mid-year, final grade at end of second semester
 - ▶ Can elect to continue at different credit levels after first full year
- ▶ **No formal curriculum separate from the faculty-led research agenda**
- ▶ **Regular meetings as arranged (no assigned classroom space)**
- ▶ **Quarterly centralized shared learning modules and regular progress reporting**
- ▶ **Course Support Stipends**
 - ▶ \$2000/semester per section (reallocated tuition)
- ▶ **Faculty don't get course release – are “appointed” through ArtsEngine/CoE**

FEAST 2022

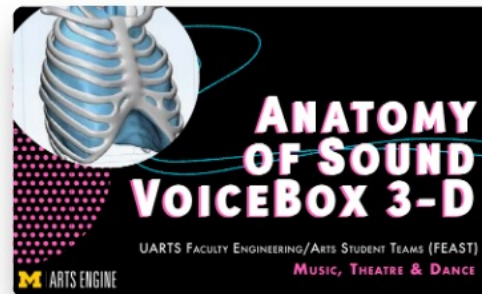
19 Teams (9 returning, 10 new)
~100 students



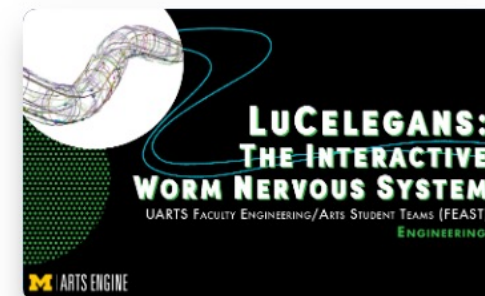
More 2022 Projects



More 2022 Projects

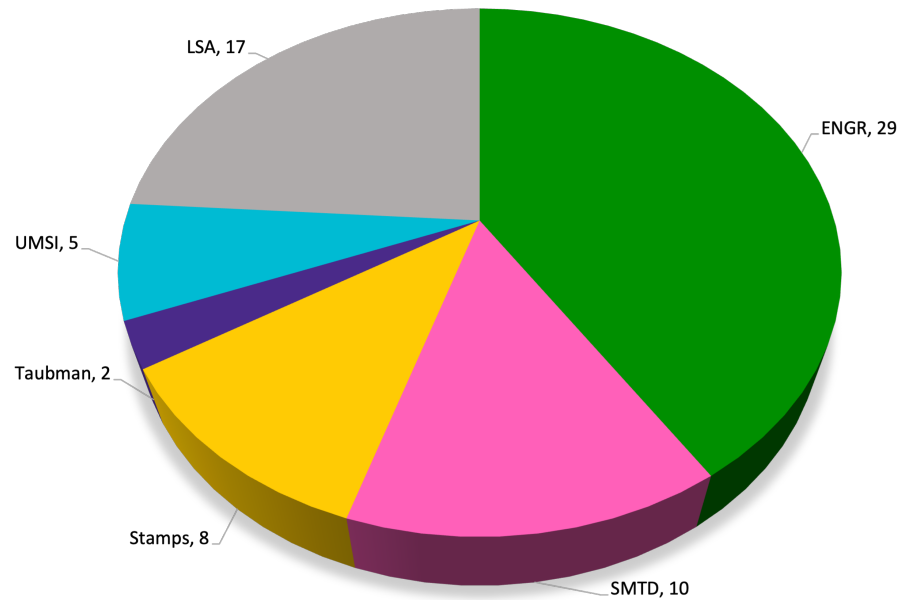


<https://artsengine.engine.umich.edu/feast/>

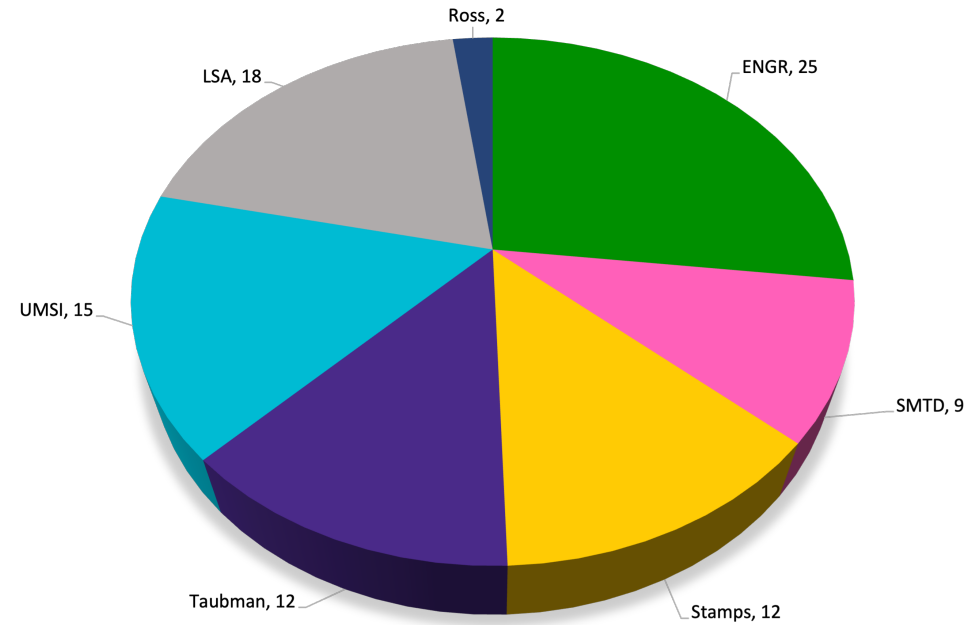


Student Participation Breakdown

2021 FEAST Projects



2022 FEAST Projects



Challenges

- ▶ **Faculty Expectations**
- ▶ **Faculty Recognition**
- ▶ **Incomplete/Insufficient Teams**
 - ▶ Apprentice level applicants
- ▶ **Homogeneous Teams**
- ▶ **Course Substitution/Competing Priorities**
- ▶ **Attrition**
- ▶ **Need for Summer Bridge Support**
- ▶ **Sabbaticals/Faculty Availability**
- ▶ **MDP Project Competition** (internships, career readiness, resume building, perception imbalance)
- ▶ **Meaningful Project Showcase opportunities**
- ▶ **Staff Capacity/Administration**
 - ▶ Transcript review
 - ▶ Overrides
 - ▶ Course Substitutions
 - ▶ IP Agreements
 - ▶ Development of Modules
 - ▶ Weekly/Monthly report regimen
 - ▶ Faculty Check-ins
 - ▶ Surveys/Evaluation
 - ▶ Purchasing/Spending
 - ▶ Documentation/Faculty Oversight

Outcomes & Highlights

The first 18 months

▶ **ArtsEngine**

- ▶ Additional courses toward certificate/minor
- ▶ Greater student/faculty impact
- ▶ Increased funding through tuition sharing with schools and colleges

▶ **Students**

- ▶ Unique research and educational opportunities
- ▶ Credits toward ID minor, course substitutions
- ▶ Connection and recommendations from unexpected faculty mentors
- ▶ Scholarly citations, resume enhancement
- ▶ Reflective practice, practice!
- ▶ Summer research support

Outcomes & Highlights

The first 18 months

► Faculty

- Recruited skilled and committed student research team
 - Access to students outside normal purview
- Exploration of a discrete, new, or desired research project
- Research project highlights
 - New Grant Funding – Internal and External
 - FEAST teams collaboration – SonicElegans Fall 2021
 - Prototype solar powered citizen space weather sensing system – Summer 2022
 - Mayo Clinic sleep data performance – Fall 2022
 - 2nd annual "Band to Welcome Spring" international synchronous musical performance/jam
 - LIDAR scanning/XR of Rackham Bldg, Hill Auditorium, Big House - <https://artsengine.engin.umich.edu/feast/spatial-ideas-storytelling-gilpin/>

Outcomes & Highlights

The first 18 months

► **University of Michigan**

- Increased grant funding and faculty research support
- Generation of new spin-off curricular offerings
- a2ru webinar presentation – April 2022 😊



Questions?

Thank you!

Contact Info:

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