IUPUI Student Research & Engagement Day
Creative Activities Abstract Book

A

<u>Expression Observed</u>
Gabriel Akre[1]
[1]Sculpture and Painting areas: Department of Fine Arts, Herron School of Art + Design, IUPUI

Introduction: I see my work as a means to reach people, to call them out of themselves, and to speak with the language of the heart by use of emotive imagery and striking visuals. In the past, this has been done most directly in my painting, but with my current work I am investigating how these qualities in painting can inform certain qualities in sculpture. Objective: The goal of my work is to convey Beauty to my viewer, which is a universal human need. Additionally, this work aims to investigate how similar imagery communicates differently depending on the material used in making artwork. To do this, I am creating oil paintings and sculptures that strive for the same end but by different avenues. This manifest itself with sweeping, emotive landscape paintings and sculptures. Method: Working from direct observation of a specific painting, I create sculptural passages that are expressive and living, unique to the language of sculpture. These sculptures are crafted with clay and later cast in bronze. My investigation considers the differences in the two-dimensional process of painting versus the three-dimensional process of sculpture, which is concerned with a greater sense of special awareness. Results/Conclusion: This process will allow me to achieve an understanding of how painting and sculpture can communicate with one another within my work. I am confident that this process will give me a new lens to see painting through sculpture, in the same way I can see sculpture through the lens of painting.

Mentors: Greg Hull and Danielle Riede, Department of Fine Arts, Herron School of Art + Design

<u>Performance of "Weird Breakfast" (2019) for Electronics</u>
Galileo Asher, *composer*
Department of Music and Arts Technology, IUPUI

The composer introduces a new work for electronics, demonstrating computer audio creation, sound manipulation, as well as integration of peripheral instruments such as the Korg Minilogue analog synthesizer and the Akai APC 40 controller. "Weird Breakfast" references current electronica-based musical devices such as drum machines, synthesizers, and digital audio signal processing. "Weird Breakfast" demonstrates a new way of crafting and performing of music by integrating technology and musicianship. The use of these devices requires practice, just as a pianist needs to practice in order to perform at a high level. The composer's work shows that musicians today are now capable of crafting quality compositions using modern music technology, just as musicians perform and compose using tried and true guitars and pianos. This new way of music creation and performance is a significant factor in moving the music industry forward as a new avenue for musicians to make music.

Mentor: Scott Deal, DMA, Professor, Music and Arts Technology.

C

<u>Casting in Metal</u>
Kionna Chase[1] April Knauber[2]
Department of Fine Arts, Herron School of Art and Design[1,2]

To display pieces of art that show how we cast in metal at our foundry in the Sculpture department would help shine light on our facilities and our quickly evolving techniques. This method involves old techniques that our ancestors have used and also new techniques that have been birthed by modern technology. Within our research, we hope to engage our audience through the idea of combining contemporary practices with traditional materials that date back to five thousand years.

Mentors: Greg Hull, Eric Nordgulen

<u>Standalone Binary</u>
Harry Chaubey
Department of Music Arts & Technology, Purdue School of Engineering and Technology.

"Standalone Binary" is a music piece which depicts the elimination of laptop software by digital embedded standalone musical devices. The piece consists of few of commercial digital devices based on different signal processing and two of self-made instruments suing embedded systems. There will be 8 and 16 bits sounds incorporated using DIY circuitry assembly. The approach

is to drop laptops from live performances as they are not reliable as compare to digital platforms which are easy to build and will only do what the user will program them to do. They can be a dedicated hardware with digital code on them to perform a single task.

Mentor: Prof. Scott W. Deal

D

Gesture based Controller for Real-time Audio Processing
Arun David, Berty Edwin[1]
[1]Department of Music and Arts Technology, Purdue School of Engineering and technology

Author presents wearable controller and a highly efficient and accurate gesture recognition algorithm for real-time audio processing. X, Y and Z axis accelerometer readings from the wearable wrist band sensor are used to track the motion of the arm and an Artificial Intelligent algorithm called Dynamic Time Warping is used to classify the gestures in real-time. The system is trained through supervised learning with the ability to learn and adjust to gestures in real-time. The data from the wearable is wirelessly transferred to the processing computer which runs the algorithm through a Visual Programming environment called Max/MSP. Max/MSP also has the ability to process audio in real-time and the output of the algorithm is used to control different parameters of the audio based on the mapping parameters in Max, turning the wearable device into a real-time controller for audio processing. Average time to classify a gesture using the algorithm was 857 milliseconds and the average accuracy of classifying a gesture when trained with inputs from a single performer was 90%. Thus, an accurate and an efficient algorithm for real-time gesture recognition has been developed and implemented in a wearable wrist-band sensor.

E

Timbre Corrective Brass Instrument Mute
Jacob Elliott
Department of Music Arts and Technology, Purdue School of Engineering and Technology

This project aims to develop an electronic instrument French horn mute that will transform the muted signal into a natural horn sound and also employ sensors and MIDI pads. The mute causes acoustical timbral differences that are compensated for using signal processing in order to achieve a natural output. This device addresses the issue of a horn in music performance, either for balancing sound in settings of a small ensemble of musicians or in any given performance setting in which applying signal processing may effectively suppress the sound of the horn while not sacrificing timbre. The electronic mute will address the aforementioned issues by being designed as a straight mute that will hold contact microphones at its base with MIDI pads at the side. The gyroscope will be placed at the base of the mute to make possible gestural movements more obvious to the performer. To adjust for timbre changes, the signal will be processed by
Max/MSP via smart filters that adjust harmonics in a 1:2:3 ratio with altered Q factors determined by incoming pitch. The resulting signal should closely match that of an unmuted horn. Having provided an example of its implementation in public performance, this project also provides a means to extend the relevancy of acoustic instruments in our evolving musical world and contribute to the study and creation of hyper-instruments.

Mentors: Robin Cox, Department of Music Arts and Technology, Purdue School of Engineering and Technology; Timothy Hsu, Department of Music Arts and Technology, Purdue School of Engineering and Technology

J

Sugar Works: an artistic exploration of diabetes
Andrea Jandernoa
Visual Art, Herron School of Art & Design

Diabetes is a chronic illness that impacts patients physically, socially, and emotionally. While medical research and treatment consider the physical impacts of the disease, effective diabetes care must also examine patients' social and emotional experiences. I manipulate sugar to create work about my own experiences as a diabetic. Using sugar allows me to situate social, emotional, and sensory experiences within an organic material that changes over time. I use sugar in forms that are vulnerable to the environment and ultimately deteriorate. This fragility and slow-motion-loss embody the emotional consequences of treating chronic illness and evoke common experiences of unpredictability and hyper-vigilance. From this studio practice, I have designed an arts-based research study to teach sugar pulling to diabetic patients. This study intends to support diabetic patients as they develop the language and metaphors needed to articulate their social and emotional experiences. Both my visual work and this study provide innovative structures that enable meaning-making, improve articulation, and increase visibility for the social and emotional aspects of living with diabetes.

Mentor: Youngbok Hong, Herron School of Art & Design, Danielle Riede, Herron School of Art & Design

K

Multiple Sensory Sculptures
April Knauber[1]
[1]Department of Fine Arts, Herron School of Arts and Design

The purpose of my sculpture is intertwined within the concept of using sensory components as a way to communicate a moment in time or memory. Having these multiple sensory sculptures, whether sound, smell, or sense of touch, adds an extra layer to what would be a stagnate piece. My goal is to show the audience untraditional materials used within sculptures and how these senses of action (and interactions) taken on the piece affects oneself, whether it be positive or negative. Being able to share this moment of intimacy with the viewer, and their reaction to the piece, is a step further of what is traditionally thought of as art in terms of material and the amount of interaction we had been taught in order to respond to artworks.

Mentor: Greg Hull, Department of Fine Arts, Herron School of Arts and Design

Found Materials Assemblage
Madysen L. Koontz
Department of Fine Arts, Herron School of Arts and Design

By using found materials, the piece defamiliarizes known objects and creates a surface that is altogether known and unknown. The piece interacts with the wall around it, as to not forget the surface it hangs on. Using only discovered objects from the location it was originally displayed, the art brings attention to the space around it. Through careful consideration and thoughtful seeing, the viewer can begin to identify objects and subtle interactions they may have missed. The piece in its fulfillment seeks to undermine traditional concepts of image and wall, and allow for the art to extend beyond the frame and continue the non-traditional art happening today.

Danielle Riede, Department of Fine Arts, Herron School of Arts and Design

L

Creating a Modular, Interactive Music Experience Using Environmental Sensors and Machine Automation
Michael Lamb
1Department of Music and Arts Technology, Purdue School of Engineering and Technology

This project showcases a custom-designed musical instrument that uses photosensors to record light levels, and uses this data to control the triggering of a variety of sound objects. The goal of the project is to create a dynamic electronic performance that encourages audience interactivity, is influenced by environmental factors, and avoids repetition each performance. The instrument is automated to create random, cohesive harmonic progressions, and thus requires no training or musical education to operate. Due to the randomness of the automation, the instrument creates an original work of music every time. Audience members will be allowed to control the device to perform a piece of music. The instrument uses a hand-operated crank to control the amount of light in a series of cylinders which is measured via photosensors attached to an Arduino circuit board. The data gathered by the photosensors is sent to a Max program which scales and outputs the data as MIDI values. This MIDI data is sent to an Ableton Live session where it is used to trigger an automated array of notes from four sound objects. Ideally, the mechanical control aspect of the instrument, along with note automation that does not allow for user mistakes, will yield a piece of music that is enjoyable to perform and more interactive than conventional electronic music performances. This project is significant to music technology as it serves to enhance audience engagement, which is a primary goal in every art form.

Mentor: Robin Cox, Department of Music and Arts Technology, Purdue School of Engineering and Technology

M

"The Circle (musical performance on live technology-based instruments)"
Shannon McConnell
Department of Music and Arts Technology; School of Engineering and Technology

This project consists of an original work lasting 4 minutes and 10 seconds, using the digital audio workstation Ableton Live in conjunction with a guitar, and a MIDI foot Controller. The project consists of prerecorded / determined elements and sequences, triggered live by a human performer while singing and playing guitar, adding effects to both.

Dr. Jason Palamara (MAT)

Sino (Who?)
Abigail L Mendoza
Painting, Herron School of Art and Design

My portfolio is comprised of all oil paintings on both handmade canvas and wood panel. Its focus is identity-based work, particularly of the Asian-American identity. Different elements in the work relate back to my culture through the titles, patterns used, and native iconography. Through my work, I learn more about my own culture and being a "perpetual foreigner": the "Asian" one among my American friends and the "American" one when I am home in the Philippines. Not only does it illustrate topics such as cultural appropriation and alienation due to minority status, but it also questions the boundary between commercializing on such things versus regarding such work as fine art. By delving into who I am through creative and visual means, I hope to promote APIDA-awareness and empowerment.

Danielle Riede, Painting, Herron School of Art and Design, Indiana University – Purdue University Indianapolis

P

"84 (musical performance on live technology-based instruments)"
Ben Parker
Department of Music and Arts Technology; School of Engineering and Technology

This project consists of an original work lasting 4 minutes and 45 seconds, using the digital audio workstation Ableton Live in conjunction with an Arturia MiniLab MKII MIDI Controller. The project consists of prerecorded / determined elements and sequences, triggered live by a human performer who also improvises unique melodic material and adds effects.

Mentor: Dr. Jason Palamara (MAT)

S

The Islands of Langerhans – A Serious Game/Simulation
Christine Schulte [1] Joseph Defazio [2] Mathew Powers [2]
[1]Electrical and Computer Engineering, Purdue School of Engineering & Technology
[2] Department of Human-Centered Computing, School of Informatics and Computing

This creative activity/research project is a serious game/simulation on the topic of Type 1 Diabetes Management. This game is currently in development (work-in-progress). The audience is college-age students. The story is both fiction and fantasy and theme of the game's focus is the Viking Era. Using a simulated smartphone, the game will collect data from player interaction as they navigate a ship and explore different lands visited by Vikings from 793 to 1066AD. The game engaged players with a series of tasks and self-management challenges.
Within the game the simulated smartphone application will help patients self-manage their diabetes as well as provide simple tools to organize and track their health information, such as blood glucose levels and drug intake. It will provide patients with easy access to information related to their health condition and will facilitate supplemental care, by coaching or prompting, to help patients manage their glucose levels. The application will help patients maintain a healthy weight, manage caloric/snack intake and adhere to drug intake times. It can conduct simple calculations such as Body Mass Index based upon height, weight and gender as well as provide medication reminders. The future design of the application will be to help the diabetic patient document and communicate their medical findings to the health care provider as a personal diabetic health record.

Mentors Joseph Defazio, Mathew Powers, Department of Human-Centered Computing, School of Informatics and Computing

Electro-Organic Live Performance
Srikrishnan Sridharan
Department of Music and Arts Technology, IUPUI

The creative performance focuses on the South Indian acoustic percussion instruments and its interaction with the modern-day technology. The kanjeera is an Indian frame drum made from monitor lizard skin. It is an authentic percussion instrument used in classical concerts in south India since early days. Morsing, also known as the jaw harp is one of the rare string percussions, used as an accompanying instrument in South Indian classical music. This performance includes both the instruments along with the Ableton push midi controller and the Ableton live digital workstation. The performance blends the acoustic and electronic sounds together creating a digitally enhanced sonic soundscape. The acoustic percussion instruments are processed live through the microphones interfaced with the Ableton Suite. The live processing of the instruments manipulates its timbre, dynamics, and spatizalition during the performance. The performance also explains in brief about konakkol- Vocal percussion form used in South India and its importance in the performance scenario.

Mentor: Scott Deal, Department of Music and Arts Technology, IUPUI

Modern Alchemy: Transmuting Complex Difficult Emotions into Social Gold

Joelle A. Stille[1]
[1]Departments of Sculpture and Art History, Herron School of Arts and Design, IUPUI

When two ends of a continuum meet, transcendence occurs. This is happening now with the merging of art and neuroscience—the mystical unifying with the medicinal. Through sculpture and performance, I experiment with radical vulnerability as a means to transmute complex and difficult emotions, the processing of which remains largely absent from mainstream curriculum despite their ubiquity. I find that publicizing the typically private—a merging of a continuum—sheds light upon psychological shadows and results in almost instant positive transformation, as well as notable advances in community development. For example, expressing the masochism of suicidal ideation or internalized shame from sexual assault through art connects neutral physical sensation with negative psychological narrative in ways that can not only reroute the neural pathways of trauma, but can provide the patient-turned-participant with greater senses of agency and purpose, and reduce alienation within communities united by shared meaning. This self-healing technology is a potential alternative or supplement to pharmaceuticals as primary means of mitigating dis-eases of the mind, and may also encourage a shift forward in the current projected timeline of generativity, a critical psychosocial advance.

Advisors: Patrick Kinsman, Department of Art History, Herron School of Arts and Design, IUPUI; Greg Hull, Department of Fine Arts, Herron School of Arts and Design, IUPUI

T

The Sight of Sound

[1]**Chris Turley**
[1]The Department of Music Arts and Technology, Indiana University-Perdue University Indianapolis (IUPUI)

Sight of Sound is an interactive audio/visual application. The project generates audio reactive 3-D renderings in real time to accompany a performance of Sarah Hennies' experimental percussion quintet "Lives". Using the graphic programming environment Max/MSP, an audio analysis algorithm was constructed that takes incoming audio signals and routes them to control various parameters of a 3-D graphics engine. This has allowed for the combination of a video experience with an immersive experimental musical performance. The graphics engine reacts directly and proportionately to the musical performance. The 3-D models created by the video engine take on a life of their own as they provide a visual element of random shapes that follow the timbre, amplitude, and frequencies introduced by the performance.
In a real sense the algorithm chooses what size, position, camera angle, and shape to display.

Mentor: Jordan Munson; Corey Denham

V

Controlling Analog Synthesizers Over Local and Wide Area Networks

Matthew C. Vice
Department of Music Technology, IUPUI School Of Engineering And Technology

The Department of Music Technology offers a graduate course studying the design and musical performance of analog synthesizers (MUS-Z320). The course is offered as a blend of physical classroom and online participants. The author is enrolled in the course and within the first week wondered "how can the online students perform in tandem with the students on campus?" A few computer programs were then designed as a solution to control analog synthesizers with external sensors over LAN or WAN, using a combination of analog control voltage ("CV"), MIDI, Open Sound Control ("OSC"), and UDP. The programs were created in the Max/MSP environment or using Python being run by a Raspberry Pi microcomputer. The program created in Max/MSP is used between online or "telematic" performers, sending various control data in UDP packets. The control data input is filtered by type and formatted as OSC messages before transmission. A user receiving the OSC messages can route the embedded data to an external device (e.g. MIDI device, external circuit). The program created using Python acts as an "OSC server", listening for UDP packets that contain OSC messages and then processing special messages to external digital-to-analog ("DAC") circuits used to control various parameters of analog synthesizers.
This project aims to improve telematic performances through more efficient data transmissions and digital control of analog synthesizers. Telematic performances will experience increased performance stability at lower latencies by transmitting smaller amounts of data used to control analog synthesizers instead of transmitting high-resolution audio across Wide Area Networks.

Mentor: Scott Deal, Department of Music Technology, IUPUI School Of Engineering And Technology

W

A Pedagogical Approach to Undergraduate Level Sound Design
Xiaochang Wang
Department of Music and Arts Technology, School of Engineering and Technology

Sound designers use audio samples and effects to make visual content more engaging to the user. The author outlines a curriculum for the teaching of sound design for the undergraduate level music student. Students interested in learning about sound design have three learning tracks open to them: self-guided learning via free or inexpensive online resources, for-profit certification programs and a small number of university degree-granting systems. By conducting interviews with three professional sound designers, the author discusses the pros and cons of each of these learning models. The author then analyzes course design data from these sources to illuminate the different topics, approaches and benefits provided by each. Author discusses best practices for sound design curriculum and outlines some vital learning outcomes for future courses.

Mentor: Scott Deal, Department of Music and Arts Technology, School of Engineering and Technology; Jason Palamara, Department of Music and Arts Technology, School of Engineering and Technology

Utilizing Digital Fabrication in my Process
Paul Williams
Department of Fine Arts, Herron School of Design, Integrative Studio Practice

As technology advances so do art practices. Young Artists and Makers have begun utilizing new advanced processes that are more readily available to them, now. With advancements in technology, the price point of digital fabrication equipment has drastically dropped, which increases the accessibility to the public. As a Fine Arts major this technology plays a large part in my creation process. With time, dedication, and an eagerness to learn the true potentials of these technologies I will challenge myself to go beyond 3D printing, laser engraving, or creating pieces with just one type of equipment. Through the process of experimenting with advanced digital fabrication techniques, integrative designs, and a combination with new and traditional techniques I have begun finding what my own practice means. This process ranges from using digitally fabricated components for molds, connections, bearings, and many other applications. It is imperative to understand that every part comes together to create a whole, not one sole part makes the artwork. With time my practice will be defined, through experimentation of these digital fabrication processes.

Jared Cru Smith, Safety Curriculum Manager, Sculpture Shop Manager, Herron School of Art and Design, IUPUI; Reagan Furqueron, Director of Foundation Studies, Associate Professor, Herron

A Changed Landscape
Stephanie R. Williams[1]
[1]Department of Fine Arts, Sculpture, Herron School of Art and Design

The small body of work I would like to present relates to the waste culture embedded within our society and daily routines. The pieces I will be presenting are titled A Little Goes a long Way, A Changed Landscape, and Core Sample. The pieces were all produced using recycled paper and found trash objects, specifically plastic trash, as it is the most impactful type of waste in our environment. The work is intended to call attention to the mass amounts of plastic items and trash we are constantly consuming and discarding, and how over time this has a detrimental impact on our environment. Core Sample and A Changed Landscape are meant to show the viewer that our actions are permanently damaging our lands and even changing the composition of our soil. A Little Goes a Long Way demonstrates that even what is perceive as small can have a great impact. During the event I would like to do a small interactive demonstration on making paper using recycled materials. This way the audience can participate and learn a new way to recycle and reduce their waste. Over all I want the viewer to walk away thinking about these problems and wondering how they can make their change to reduce the problem.

Mentors: Eric Nordgulen, Department of Fine Arts, Herron School of Art and Design; Greg Hull, Department of Fine Arts, Herron School of Art and Design

Portal
Samantha Wright
Fine Arts Department: Herron School of Art and Design, IUPUI

In my work, I allow color to be the driving force behind my creations. By doing this, it gives me the ability to find my voice, and eventually form it into a world of its own. My inspiration is driven from many places, but one artist I feel a connection with is Yayoi Kusama. Like me, she had issues with OCD, and she used that as a driving force to create beautiful polka dot pieces.
For this last semester, I want to push myself further and continue to discover the processes of working with fabric, paint, and steel. My main goal is to explore different ways of incorporating 2-D work into my sculptures, and break comfort zones. For this first project, I was at the top of a 16-foot ladder for several days. During this time, I played with different color schemes, and learned to center myself when my fears would arise.I want to experiment different ways to gain audience engagement with my pieces. Compared to my past work, this is a step in that direction. My last few pieces have been about playing and experimenting with these fabric forms, thinking of new ways of displaying them, and exploring composition.

Mentor: Greg Hull