TOWER DAY 2019

CSU UNDERGRADUATE RESEARCH AND CREATIVE ENDEAVORS SYMPOSIUM

APRIL 18

Join us for an event of academic dialogue and celebration at CSU. Tower Day is an annual celebration of CSU undergraduate research and creative endeavors. CSU students from different diciplines present their research, creative practice, SAGE program and QEP We Solve It poster presentations. Students give 20-minute presentations, facilitate poster sessions, art display, and performance.

This program is designed as an initiative to give CSU students an opportunity to share the research outside the classroom. Divided into morning events and afternoon sessions, with keynote presentations by a faculty and an alumni, professional practice workshop, art exhibitions and musical performance.

Program

9:00 - 10:30	Registration at the Davidson Student Center Lounge

9:15 - 10:45	Poster Setup
	Davidson Student Center
	      Lounge Area
	      Columbus Room

11:00 - 12:00	Keynote Speakers Dr. Ryan Lynch Mr. Christofer Gass, class of 2018 Davidson Auditorium
12:00 - 1:00	Tower Day Reception Davidson Auditorium Lobby
12:00 - 1:30	Poster Presentations and Judging Davidson Center Lounge and Columbus Room
12:30 - 1:30	CSU Celebrates Student Writing Schuster 130
1:30 - 4:00	Oral Presentations and Judging Schuster 101, Davidson 254, 256, 258, and Auditorium
4:30 pm	Art Exhibition and Creative Computing Reception, Musical Performance Davidson Center Lobby Followed by the Awards Announcement

Contents

KEYNOTE

The Origins of the Islamic State: Remembering the Islamic Past from the Umayyads to ISIS

When the Islamic Prophet Muhammad purportedly died in 632 CE, a confederation of newly-converted Arab-Muslim warriors rode out from the Arabian Peninsula to create an Islamic empire that spanned the Middle East, controlling territory from Spain to India. But the process of creating a new Islamic state – a Caliphate – was an arduous one.

Centuries later and with the state in turmoil, Muslim scholars would reflect on the early Islamic past, and the Muslim administrator al-Baladhuri (d. ca. 892 CE) would write a book to celebrate what worked and to teach the next generation how best to run the empire. In Dr. Lynch's talk, he will discuss the importance of this book for our understanding of Middle Eastern history, and how medieval texts like it continue to have major significance in the Middle East today.

Dr. Ryan Lynch is an Assistant Professor of History in the Department of History and Geography, specializing in Middle Eastern and Islamic history. He completed his DPhil (PhD) in 2016 at the University of Oxford and arrived at Columbus State after previously teaching for Oxford, Stetson University, and Middlebury College. His new book Arab Conquests and Early Islamic Historiography: The Futuh al-Buldan of al-Baladhuri will be out in Fall 2019 with I.B. Tauris.

KEYNOTE

Common Grounds

Christofer Gass believes in digital platforms for pedagogical use in art centers and parks, to aid in informing visitors of important aspects that may otherwise be overlooked. Christofer was awarded the Student Project Award from the Georgia Association of Museum and Galleries and the Student of Excellence Award from CSU's History and Geography department in 2018. When not in class, researching and/or attending conferences and symposiums, Christofer enjoys running, photography and visiting museums & parks in New York City.

Christofer Gass earned a B.A. from Columbus State University majoring in Art History and a minor in Geography. He is currently perusing a M.A. in Digital Humanities at CUNY, the Graduate Center in New York City, and is focusing on digital curation and virtual tourism.

CELEBRATION OF STUDENT WRITING

The Celebrartion of Student Writing will honor the work of the 2018-19 Faculty Writing Fellows and their students, the Outstanding Teacher of Writing Award, and the First-Year Composition Outstanding Essay Contest Winners and the faculty who taught them. This event is a tradition that began with our first QEP, Writing the Solution, which was intended to encourage and to assist faculty with their efforts to use writing as a means of improving student engagement and learning in their courses.

PROGRAM

Presentation by Art History Students

First-Year Composition Outstanding Essay Contest Winners

John White (student ENGL 1101), Nancy Blair (instructor)
Jake Eishen (student ENGL 1102), Nick Norwood (instructor)

Faculty Writing Fellows

Anastasia Angelopoulou
Stephanie da Silva
Elizabeth McInnis
Joe Miller
Melissa Hebert-Johnson

Outstanding Teacher of Writing Award Winners

Claire McCoy
Michael Barker
Parul Acharya
Clayton O'Dell
Aisha Adams

ART

Surveyor

Works by **Andrew Turner**
Mentor: Professor Hannah Israel and Rylan Steele
SRACE Recipient

Turner's current work is composed of two genres of photographs, one that centrals behind psychological fictional narrative often involving a character in a troubling scenario and the other is of non-fictional based scenes that are composed of visual elements that he find in exploring the city.

Human Isolation

Works by **Miranda Fortenberry**
Mentor: Professor Hannah Israel and Professor Orion Wertz
SRACE Recipient

Fortenberry creates art that deals with the isolation of the human condition in conjunction with the reality of the physical world. She utilizes the memory she shares with her subjects as a touchstone into the viewers' own hardship. Her aim is to connect the viewer to herwork by juxtaposing these two realities.

Mindfull

Works by **Darrell Terence Harris**
Mentor: Professor Orion Wertz
SRACE Recipient

His most recent book is about a protagonist whose imaginary friend stay with him into adulthood to his own determent.

MUSIC

Performance by **Jonas Lonzanida, Kirk Habana, Bryan Canonigo, Jared Cummings, Mary Katherine McClung, Zachary McDonald, Hezekiah Rodgers, Marquestis Bullock, Peyton Sanders, Ryan Wood, and Ryan Boyd**

Mentor: Dr. Joseph Girard

Performed at the North American Saxophone Alliance Region 6 Conference

The Schwob Saxophone Ensemble will perform a program they presented at the Region 6 North American Saxophone Alliance Conference at the University of Mississippi in Oxford, Mississippi. The conference took place March 22- 24, 2019 in Nutt Auditorium.

Through attending the conference and performing in the Schwob Saxophone Ensemble, members represented the quality of education and performance at Columbus State University on the national stage. Not only was the saxophone studio represented, the ensemble performed a work written by Columbus State University saxophonist and composer, Zachary McDonald. His work "You & I and One and the Same", was written specifically for this ensemble. The other work, "Mare Tranquillitatis", by composer Roger Zare was originally written for wind ensemble and appeared on the Columbus State University Schwob Wind Ensemble CD, "Prelude, Fugue, and Riffs". This performance was the first of it's kind for this type of saxophone ensemble.

CREATIVE COMPUTING

Creative Computing in Computer Science
Instructors: Ms. Hillary Fleenor
and Dr. Anastasia Angelopoulou

Computer code is a powerful tool for creation. Code is used for creating software applications, but it can also be used to create artifacts such as cartoon images, music, and animation. Instructors in TSYS School of Computer Science have been restructuring assignments to foster creativity using code in Computer Science 1. This display showcases student work in the following categories.

Images:
Python 3 code using the Turtle library to create cartoon images. The actual assignment varied from creating a landscape to creating a human bust.
Students: Gerald Andrews, Sophia Bartell, Nicole Bessinger, Bret Brown, Hunter Gallahair, Isaac Guffey, Danielle Hildebrandt, Jonathan Hutchins, Peter Keres, Garrett Kirkwood, Caleb Klein, Tiffany Lee, Maria Mills, Joaquin Mora, Georgia Patterson, Morgan Rambler, Laurah Rigard, Kyle Robertson, Jordan Sloanaker, Keir Smith, Kevin Stanford, Emmanuel Vanderson, Kamie Vardaman, Nicholas Williams,

Music:
Earsketch (Georgia Tech) and Python 3 code to create music.
Students: Bret Brown, Isaac Guffy, Nicholas Kimmel, Garrett Kirkwood, William Tyler Lee, Anantkumar Patel, Georgia Patterson, Jordan Sloanaker, Keir Smith, Ronald Staley, Darian Thomas, Emmanuel Vanderson

Animation:
Python 3 code using the Turtle library to create simple animations.
Students: Gerald Andrews, Hailee Barnwell, Matthew Collins, Hunter Gallahair, Nicholas Kimmel, Tiffany Lee, Stephen Nagy, Michael Plunkett, Kyle Robertson, Jordan Sloanaker, Kevin Stanford, Kamie Vardaman

POSTER SESSIONS

POSTER SESSIONS

COLUMBUS ROOM/TABLE 1
Carly Smith
Mentor: Dr. Courtney George
English

*The Implications of 1980s American Novels on the
Dominant Narrative of the Decade*

This presentation aims to challenge the dominant narrative that
credits the 1980s with being an era of immense prosperity in Amer-
ica by examining the literature produced throughout the decade,
to include Alice Walker's The Color Purple, Sandra Cisneros's The
House on Mango Street, and Bret Easton Ellis's Less Than Zero.

COLUMBUS ROOM/TABLE 2
Amber Edmond
Mentor: Dr. Claire McCoy
Art

*Ana Mendieta and Blackness: When the Other
Consumes the Other*

Ana Mendieta is known for her performances and earthworks that
advanced body art in the 1970s. I argue that "Blackness" is
paramount to Mendieta's conception of her identity and by
extension her work, despite being raised a white Catholic Cuban
woman.

COLUMBUS ROOM/TABLE 3
Rosamaria Smith
Mentor: Dr. Susan Hrach
Modern & Classical Languages

Sor Juana Inés de la Cruz

This is a project to present in English and in Spanish a glimpse of the
Tenth Muse, Sor Juana Inés de la Cruz. Sor Juana has caused an
explosion of reactions in the world, on a lot of people such
as writers, artists, philosophers, theologians, and thinkers of all kinds
young and old to consider the basic tenets of life and what
living is about.

COLUMBUS ROOM/TABLE 4
Daniel Collins
Co-Presenters: Brianna Dent, Emily Larkin, Suriyana Mahadeo, and Adrian Starling
Mentor: Dr. Basil Conway
Teacher Education

"Excel"ling @ Project Based Learning

Within the Uteach program we focus on innovative learning techniques to implement in our classrooms. One of these techniques is effectives teaching through projects. This allows student creativity and helps them connect content to real life. This presentation is an example of an exemplary project based learning experience.

COLUMBUS ROOM/TABLE 5
Astoria Doyle
Co-Presenter: Kellie Edenfield
Mentor: Dr. Mark McCarthy
Teacher Education

Implementing the #ThankYOUInitiative:
An Expression of Gratitude Toward Teachers

This project describes the process of creating and implementing a service initiative to show appreciation to public school teachers. This community initiative was completed without direct institutional support from CSU. As such, this research provides a structure for future work and outlines obstacles faced while individually enacting this initiative.

COLUMBUS ROOM/TABLE 6
Julia Vroman
Co-Presenters: Rebekah Medina, Katelyn deBrabant
Mentor: Dr. Diana Riser and Dr. Brandt Smith
Psychology

Dehumanization of Children
Brief: This project is a continuation of a previous independent study regarding prevalence of dehumanization of children. We investigated any potential differences in the level of dehumanization based on age, experience with children, and interpretation based on visual primes.

POSTER SESSIONS

COLUMBUS ROOM/TABLE 7
Matt Hooper
Mentor: Dr. Florence Wakoko-Studstill
Criminal Justice & Sociology

Effects of Explicit Music on Teenagers

It is important to understand the behaviors and speech patterns utilized that are dependent upon the type of music listened to-whether a song is marked "explicit" or "clean".

COLUMBUS ROOM/TABLE 8
Allissa Halderman
Mentor: Dr. Florence Wakoko
Criminal Justice & Sociology

The Effects of Extracurricular Social Clubs on the Social Integration and Development on Special Needs Children without Social Cognitive Skills

This study will strive to see if extracurricular social activities help in the social development of children with mental disabilities ie, Autism or ADHD in mainstream peer integration.

COLUMBUS ROOM/TABLE 9
Austin Lee Gilford
Mentor: Dr. Stephanie da Silva
Psychology

Comparison of Two Procedures for Training Stimulus Equivalence

Stimulus equivalence involves associations between unrelated items, where every item in a group is equal to every other member of the same group (also known as an equivalence class). Some of the relations between items in an equivalence class are trained explicitly and some relations emerge indirectly from the training. This project aimed to look at how quickly college students form equivalence classes under two different methods of training: one-to-many and many-to-one.

POSTER SESSIONS

COLUMBUS ROOM/TABLE 10
Jenna Gaskins
Co-Presenters: Catisha Hines, Angel'eya Wilson, and Alexander Langston
Mentor: Dr. Stephanie da Silva
Psychology

Task Persistence Under Conditions of One-Time Versus Cumulative Payment

The purpose of the current study is to measure the impact that cumulative incentives and incentives only given after the task's completion have on task persistence—the amount of time that people spend on an impossible task.

COLUMBUS ROOM/TABLE 11
Teraycia Lovett
Mentor: Dr. Stephanie P. da Silva
Psychology

Response to Airborne Auditory Stimulation in Mudskipper Fish

Mudskipper fish are closely related to amphibians, with the ability to survive in and out of water. This project investigated responses of these fish to airborne auditory stimulations at different frequencies and decibels.

COLUMBUS ROOM/TABLE 12
Dylan Williams and Jaunia Everett
Mentor: Dr. Stephanie da Silva
Psychology

Reappearance of Response Patterns in Extinction

Patterns of key pecking behavior in pigeons were learned over three phases.

COLUMBUS ROOM/TABLE 13
Chad Reynolds
Mentor: Dr. Kathleen Hughes
Biology

The Impact of Honey and Caffeic Acid on Oxidative Stress as a Protective Agent for Human Nephrons in a Hyperglycemic Environment.

POSTER SESSIONS

COLUMBUS ROOM/TABLE 14
Erin Perry
Mentor: Dr. Kevin Burgess
Biology

DNA Barcoding the Orchid Flora of Ecuador

Ecuador has one of the greatest densities of species per area of any country on Earth. The goal of this project is to aid in establishing a DNA Barcode sequence library for the orchid flora of Ecuador as well as increasing the global plant biodiversity knowledge.

COLUMBUS ROOM/TABLE 15
Corey Stewart
Mentor: Dr. Suk Lee
Computer Science

Raspberry Pi Home Security System

This project uses a raspberry pi – a relatively small and cheap computer – and its camera module to act as a simple home security system. By interfacing with a variety of sensors, this system can inform the user on the state of their area of interest via email notifications.

COLUMBUS ROOM/TABLE 16
Jesse Hunt
Co-Presenter: Tracee Guthrie
Mentor: Dr. Brian Schwartz
Biology

The effects of sodium chloride concentration in the development of Dictyostelium discoideum

Dictyostelium discoideum has been studied in developmental biology for purposes of understanding multicellular evolution and cell fate specifications. The rate at which D. discoideum develops into fruiting bodies can indicate the effects of different environmental factors on the slime mold. Our specific research goal is to understand how even very small amounts of NaCl affect the development of D. discoideum.

POSTER SESSIONS

COLUMBUS ROOM/TABLE 17
Thong Ta
Mentor: Dr. Kerri Taylor
Chemistry

Synthesis and anti-proliferative activity of N,N'-bis-substituted triazolium salts with lipophilic and hydrophilic substituents

Synthesis, characterization, anti-proliferative activities of triazolium salts derived from triazole heterocycle. Biological activities against breast (*MDA-MB-468*) and prostate (*PC-3*) cancer cells line will be spotlighted.

COLUMBUS ROOM/TABLE 18
Mary Halbrook
Mentor: Dr. Michael Newbrey
Biology

The effect of a thermal gradient on age and growth characteristics of Largemouth Bass (*Micropterus salmoides*)

This study aims to examine the relationships between mean annual temperature and variation in Largemouth Bass (*Micropterus salmoides*) longevity and size at age 3.

COLUMBUS ROOM/TABLE 19
Jasmine Bohannon
Co-Presenter: Domenica Fertal
Mentor: Dr. Anil Banerjee
Chemistry

Preparation and activity of heterogeneous catalysts for methane combustion

Methane is a known greenhouse gas that has a negative effect on the environment. A large source of methane is from the exhaust pipes of cars. The goal of this study is to reduce methane emissions from automobiles at lower temperatures.

POSTER SESSIONS

COLUMBUS ROOM/TABLE 20
John Waller
Co-Presenter: Rhiana Flowers
Mentor: Dr. Lauren King
Biology

The effects of intestinal parasites on the overall health of dogs living on Andros Island

This research looks at the dogs on Andros Island to find general health markers associated with intestinal parasites and to compare the parasite load found on Andros to that of the United States.

COLUMBUS ROOM/TABLE 21
Abby Grace Moore
Mentor: Dr. Michael Newbrey
Biology

New fossil material of the bowfin, Amia, from the Sentinel Butte Formation (Paleocene), Medora, North Dakota

Fossils of an unidentified species of Amia were found in the Sentinel Butte Formation, a geologic formation of Paleocene age (~ 60 million years ago) near Medora, North Dakota. This new material is distinguished from other species based on three criteria: the parasphenoid tooth patch, gular plate, and coronoid tooth plates.

COLUMBUS ROOM/TABLE 22
Abigail Abernathy
Mentor: Dr. Elizabeth Klar
Biology

Histological techniques reveal differences in intersex occurrence and severity in Largemouth bass (*Micropterus salmoides*) and Spotted bass (*Micropterus punctulatus*)

Intersex in fish species is defined as the growth of oocytes in the gonads of a male fish. The severity of intersex can vary, from just one oocyte being present, to multiple clusters of oocytes. It is important to be able to distinguish the severity of intersex, in order to properly assess reproductive health, as well as the overall health of a fish.

POSTER SESSIONS

DAVIDSON LOUNGE/TABLE 23
Meenal Joshi
Mentor: Dr. Elizabeth Klar
Biology

Histological analysis reveals background levels of intersex in Largemouth bass of the Chattahoochee River

Endocrine disrupting compounds (EDC's) cause alteration of reproductive tissue in a variety of organisms and their presence may have impacts on human health. Oocytes in male gonadal tissue can affect the reproductive capabilities of the fish as well as the overall health of the fish.

DAVIDSON LOUNGE/TABLE 24
Paul Lewis
Co-Presenters: Rashaun Hinton, Jaron Magana
Dr. Abiye Seifu
Earth & Space Science

Design of a House-Hold Refrigerator

Design of a hose-hold refrigerator based on a vapor cycle using the first and second law of thermodynamics.

DAVIDSON LOUNGE/TABLE 25
Carina Drexler
Mentor: Dr. Lauren King
Biology

Canine External Parasites: Flea and Tick infestations in Bahamian Dogs

To exploit external parasites harmful affect on dogs and how they affect Bahamian dogs. The project seeks to characterize the severity of flea and tick infestation on the dogs brought to the spay/neuter clinic on Andros Island, and determine the correlation between the dogs weight and severity of flea and tick infestation.

POSTER SESSIONS

DAVIDSON LOUNGE/TABLE 26
Luke Wright
Mentor: Dr. William Gunter
Earth & Space Science

Response of particulate matter concentrations to atmospheric conditions

This study seeks to examine the response of air pollution to atmospheric conditions. Utilizing a research-grade weather station I was able to analyze diurnal cycles of particulate matter in response to atmospheric variables. The results of my study can be utilized to minimize exposure to harmful air pollutants.

DAVIDSON LOUNGE/TABLE 27
Savannah Bridges
Co-Presenters: Zoe Halloran, Mason Hale
Mentor: Dr. Lauren King
Biology

Bacteriostactic Effects of Bush Medicine on Bacterial Pathogens

To understand the bacteriostatic effects of "bush medicine" in the Bahamas, we will study and compare the medicinal effects of five commonly used plants. This will provide some evidence as to whether natural or synthetic medicine is more or equally effective at treating bacterial illnesses.

DAVIDSON LOUNGE/TABLE 28
Paul Halford
Co-Presenter: Brendon O'Keefe
Mentor: Dr. Andy Puckett
Earth & Space Science

Refining Orbits of Asteroids: Helping Future Astronomers

Chilean and Australian telescopes are used to refine the orbits of over a dozen asteroids, whose increasingly uncertain predicted positions had put them in danger of becoming "lost." Results are published for the benefit of the global astronomical community.

POSTER SESSIONS

DAVIDSON LOUNGE/TABLE 29
Valerie Parker
Mentor: Dr. Danielle Cook
Earth & Space Science

Archaeology and the SEC: Using Football as a
Medium for Archaeology

This past spring, anthropology students at CSU chose to connect with students through a major southern past time, SEC football. Understanding that SEC football is a means of showing state pride, students selected artifacts from different SEC states to show how archaeologists display their state pride.

DAVIDSON LOUNGE/TABLE 30
Valerie Parker
Co-Presenter: Ashley Brand, Rebecca Krivitsky, Olivia Motin
Mentor: Dr. Danielle Cook
Earth & Space Science

IT'S ELECTRIC!: Using Electrolysis to Clean and Restore Artifacts

Electrolysis is a process commonly used by archivists and archaeologists to clean and restore metals. Columbus State University anthropology students have been experimenting with this method on museum quality metal artifacts from the anthropology curation collection.

DAVIDSON LOUNGE/TABLE 31
James Tyler Bass
Mentor: Dr. Diana Ortega-Ariza
Earth & Space Science

Studying ancient rocks (~355-335 Million years old):
the Fort Payne Chert and Tuscumbia Limestone in the subsurface

Geologic study of ancient marine rocks (~350 Million years ago) using subsurface data (well logs and rock cores) in central Alabama.

POSTER SESSIONS

DAVIDSON LOUNGE/TABLE 32
Ivy Do
Co-Presenter: Sara Lowery
Mentor: Dr. Diana Ortega-Ariza
Earth & Space Science

Rocks Can Talk: A Study of Our Ancient Environment

Geologic study of three locations: Phenix City and Auburn, AL and Lumpkin, GA with the goal of defining local stratigraphy and interpreting depositional environments from rocks.

DAVIDSON LOUNGE/TABLE 33
Gavin Kerr
Mentor: Dr. Rodrigo Obando
Computer Science

BSP Game Engine with Free Look Capability

This project will produce a game engine-esque type software package for the use of producing a specific type of game. The core components include: a rendering engine, an audio engine, a physics engine, and artificial intelligence. The project is composed of C++ with OpenGL for rendering and OpenAL for audio.

DAVIDSON LOUNGE/TABLE 34
Elizabeth Biggs
Mentor: Dr. Kristin Seamon-Lilly
Mathematics & Philosophy

A Statistical Investigation of Stock Market Activity and Incidences of Financial Crime

This project is an analytical analysis of the occurrences of financial crime throughout the United States by location and type in relation to the S&P 500's close price on the first of the calendar year and the change in close price from the prior year using data from the FBI's NIBRS database.

PANEL SESSIONS

PANEL SESSIONS

Gabriel Bello
Co-presenter: Gavin Kerr
Mentors: Dr. Yesem Peker
Computer Science

Software Assurance of Smart Contracts

Through documenting, explaining, and categorizing seven
smart-contract software bugs based on their varying properties,
we create a reference for developers to craft more secure code.
Consequently, smart contracts and the transactions they auto-
mate are assured to protect against the documented bugs.

Valencia Coleman
Mentor: Dr. Yi Zhou
Computer Science

Management in Software Engineering Projects

In software engineering, a team of developers must work together
to create a product for a client. It is up to the team manager to
decide how the project should be worked on. In this presentation,
I will focus on how I used several different management styles to
create a successful software project.

Bello Gabriel
Mentor: Dr. Lauren King
Biology

*Comparing Antiviral Methodologies in Biological
and Technological*

We compare the methods used to prevent viruses and malware
in a cross-disciplinary setting, analyzing the differences between
industries and proposing best practices across the
disciplines.

PANEL SESSIONS

Sophia Bartell
Mentor: Dr. William Gunter
Earth & Space Science

Modes of Convection for Severe Wind Events in North-Western Texas

North-western Texas is no stranger to severe winds. In this project, the amount of convective versus non-convective wind events will be observed. Furthermore, the modes of convection responsible for these severe wind events will be discussed at length, and exemplified by a series of three case studies.

Corey Stewart
Co-presenter: Ethan Baber
Mentors: Dr. Guihong Fan and Dr. Scott Gunter
Mathematics & Philosophy

Wind Gusts around the Chattahoochee Valley

For this project, our group investigated distributions of wind damage reports spanning the last 10 years in an area from Columbus, GA to Auburn, AL. With a focus on wind gusts, we attempted to find reoccurring phenomena in this region related to severe wind.

PANEL SESSIONS

Samantha Brewer
Co-Presenter: Jacob Halbrook
Mentor: Dr. Guihong Fan
Mathematics & Philosophy

Chattahoochee River Valley Hail Storm Analysis

This research looks at hail trends over the past decade in the Chattahoochee River Valley. Analysis of this data shows trends in recorded instances of hail regarding size and amount, in correlation with time of day, year, and season, as well as potential correlations between recorded hail and weather phenomena.

Jason Brown
Co-Presenters: Sophia Bartell, Charles Boggs
Mentor: Dr. Guihong Fan
Mathematics & Philosophy
Oral Presentations

An Analysis of Tornado Data from 2008 - 2018

Brief: We analyze tornado data from 2008 - 2018 looking for patterns that may indicate trends in the location and occurrence of tornadoes in a localized area of Georgia and Alabama.

PANEL SESSIONS

Nicholas Wilson
Mentors: Dr. Floyd Jackson and Dr. Jonathan Meyers

The Interaction of Metal Ions on L-Histidine and the Resultant Antibacterial Effect

The interaction between metal ions and a bound histidine ligand will be observed through the changes in pKa measurement. Further, antibacterial efficacy will be noted upon the metal complexes' incubation with E. coli.

Persia Tillman
Mentor: Dr. Michael Newbrey
Biology

Estimating taxonomic diversity using growth profiles and stinger morphology of 34 million year old stingrays from North Dakota

The age and growth morphologies of an extant species of stingray and an extinct species are being compared through studies of stingers and vertebral centra. There seems to be approximately three different taxa present, supporting the fact that a dramatic cooling in the environment took place, introducing smaller, shorter-lived stingray.

ZiJie Lin
Co-presenter: Julie Wilson
Mentor: Dr. Kerri Taylor, Dr. Jonathan Meyers and Dr. Lauren King
Chemistry

Synthesis and biological activity of N,N'-bis-substituted-triazolium salts as potential antimicrobial agents

A synthesis of a series of triazolium salts and their biological activities against a panel of multi-drug resistant bacterial strain.

PANEL SESSIONS

Stephanie Clarke
Mentor: Dr. Mark Schmidt
Psychology

The P3b Component as a Measure of Stimulus Evaluation
Time and Cognitive Capacity

A presentation on the *P3b* component, an event-related potential (ERP) that is believed to reflect specific brain activity, such as stimulus evaluation and cognitive capacity, in response to cognitively demanding tasks.

Faith West
Mentor: Dr. Kristen Hansen
Music

A Lighted Path: Thomas Tallis and the Protestant
Reformation Journey

This project originated in Dr. Kristen Hansen's MUSC 3228 Music History to Mozart class in the fall 2018 semester. Students were tasked with selecting a historical topic that connects to the scope of music through the years, exploring various aspects of certain composers, music genre styles, and historical instruments as they relate to the passage of time and influence of culture and society.

Abigail Dickson
Music

Dignity and Resistance: Frederick Douglass
and the Arts in America

Frederick Douglass is a monumental figure in the history of civil rights in the United States. His influence over his contemporaries and every generation since has shaped the centuries long struggle for the civil rights of the African-American community.

PANEL SESSIONS

Amy Crawford
Mentor: Dr. Shannon Godlove
English

Victorian Culture and the Lady of Shalott

The publication of Alfred, Lord Tennyson's "Idylls of the King" gained massive popularity during the Victorian era, and inspired many prominent artists to immortalize the tragic fate of one of Arthurian legend's most tragic figures, the Lady of Shalott. This presentation will discuss the relationship between Tennyson and Victorian arts.

Amber Edmond
Mentor: Professor Hannah Israel
Art

Exhibitions during the Spectacle of Black Death

I explore how art research functions in freedom struggles, particularly in a world during #blacklivesmatter when anti-Black racism is at its most visible. I'm interested in how museums respond to this visibility through the shows they choose to fund and display. To do this I look at three specific exhibitions.

Thai Johnson
Mentor: Dr. Joshua May and Dr. Patrick Jackson
Music

A Comparative Analysis of Vocal Music Settings of Robert Frost Poetry by American Composers

A presentation that details the analysis of select Robert Frost poems and their musical settings. A set of detailed program notes will be handed out to visually supplement the presentation, and clips of recorded performances will be shown to audibly supplement as well.

PANEL SESSIONS

Creativity with Constraints:
Translating and Subtitling into English

Modern & Classical Languages
Mentor: Dr. Susan Hrach

Presenters:
Lesther Orellana
Mariah Jackson
Janet Oliver

Creativity within constraints: translating and
subtitling into English

This session features course final projects, including student translations of illustrated books for children originally composed in Spanish and in Korean, and subtitling of a Spanish children's educational video game. Presenters will highlight choices that required an informed approach to culturally specific references, and special constraints imposed by page layout (space) and video animation (time).

Translation can be said to require creativity within constraints; although correspondence between languages is rarely exact, audiences expect translations to adhere closely to the original composition. In the case of culturally specific references, translators must choose how to best represent the meaning of the original for its intended audience. Approaches to translation fall along a spectrum: some translators retain ""foreign"" elements of the original for audiences to recognize and embrace, while other translators ""domesticate"" all references into vocabulary that audiences will find familiar. When limitations of space and time are added to the ordinary constraints of language correspondence, translators must rely on an intentional set of priorities to guide their work.

SAGE SESSIONS

SCHUSTER 101
PANEL SESSION 1
1:00 - 2:00

Spring Annual Game Expo Oral Presentations
Mentor: Dr. Rodrigo Obando
Computer Science

Terrell Blakey
Working Behind The Scenes
Working on backend systems in a video game is a task that can easily go unnoticed, but is equally as important as many of the more obvious features evident in any video game. Also, level design can have a significant impact playability of a video game but is one of the most important components to making a video game entertaining. Blakey will present the spawning system and objective system of the backend systems. He will also address the designing levels games and the environment to affect some aspects of gameplay on each level

Richard Myers
Recognizing Antipatterns that Result from Overapplication of MonoBehaviors in the Unity Game Engine
One of Unity's strongest features is the MonoBehavior class, a message-focused component designed to allow programmers to quickly and easily script behaviors for objects that exist in a Unity application. However, despite the engine's tendency to create scripts as Mono behaviors by default, there are some situations in which avoiding writing a Mono behavior can result in more concise, intuitive, and robust code. This talk explores the relationships between the Mono runtime, the Unity engine, Mono behaviors, and non-Mono behavior C# classes to classify common development tasks and identify whether or not they should be solved by writing a Mono behavior.

Shane Eichner
Player Interaction & Puzzles
Eichner's role in creating the game *Watergate* has been to create a way for the player to interact with various objects in the world. Eichner's responsibility of creating various puzzles to challenge the player on each level to make them more engaging and challenging. One of the puzzles being a keypad that requires a four digit number to unlock the office door and the password is hidden around the level in multiple parts. He is also responsible of creating different ways how the player can move and hide such as sprinting and crouching.

Nicholas Whitworth
Project Schedule for Games
Whitworth will present the importance of having a clear schedule when making a game. His talk will be about how the scheduling of different features and completely outlining events for every team member can lead to the production of the team. His presentation will discuss examples of a Kanban chart.

Keenan Shropshire
Enemy Patterns
Shropshire code writing handles interactions concerning the enemies and their surroundings. During the game *Jam* his work mainly have the enemies follow the player and damage the player in a way that felt good for the player. After the game *Jam* he will focus on correcting lingering problems and create new enemy types, as well as making a new movement system for the enemies.

Kirk McManus
Night Owl's "Let Me Out"
In McManus' game, the player is kidnapped by a maniac, named Dr. Rotem, who tests his victim's wits and see what he is capable of. The protagonist must solve a plethora of puzzles within one hour in order escape this hell. The game test will test your knowledge, adaptability, senses, and survivability. Will he escape Dr. Rotem's grasp or become another victim of the Rotem's game.

Darrell Harris
Using Blender in a Game
Harris worked as the senior 3D artists and PR assists, in the game *In Out Game, Let Me Out*. Many of the assets used in the game were created by using the system blender. Harris also worked on the teams logo, *Night Owl* and worked on our demo trailer for the public to see.

Robin Geven
Level Design
Geven will address how he will test the player's skill in a series of parkour puzzles, and mazes. The level starts off with the player having to find a key to unlock a chest which contains a gun. The player must then use the gun on a part of the fence to break it open and then must provide through a maze to get to the next phase. From there the player must find and press a button to open a gate which leads into a building with a bunch of obstacles that the player must cross. When back at the spawn the player must place the battery inside the teleporter to teleport back to the main lobby to continue his journey.

Timothy Ryals
Conduit - Arena Multiplayer

As the lead Network Programmer for Conduit, Ryals was tasked with ensuring an enjoyable and easy-to-learn multiplayer system. The main idea behind the multiplayer is that you will face off against other players, either as a team or by yourself, in different arena style modes, such as deathmatch or capture the flag. The game is meant to be fast-paced and will have a small player count on small maps. There are several weapons available to the player and the maps will be remodeled versions of singleplayer maps. The multiplayer aspect of the game is heavily inspired by games such as Unreal Tournament and Halo: Combat Evolved. He was also heavily involved in designing the AI and combat system for the game in order to keep a consistent pace across the entire game.

Justin Lesh
Level Design, scripting and testing

Lesh will present the scripts and designs he implemented into *Watergate*. His work on *Watergate* consists of working on the guards, the level design, scripting, and testing. For the guards, I designed a way for the guards to be able to see if the player walks in front of them in order for them to react and capture the player to halt their progress. In the level designs, he participated in helping to create the atmosphere that the player will experience during their game play in an attempt to simulate the inside of the Watergate Hotel, which is the setting of the game. He participated in the creation of multiple scripts in the game, either creating new ones myself or helping another finish or make their work better. Some of the scripts he worked on allowed the mini-map to function, the narration/dialog of the game to be shown, and the clues to disappear properly. The testing portion of his work was mostly just going behind the others players work and making sure that the new additions were functioning properly and didn't have any issues."

Francis Smith
Modeling and animating for the Timelords Project

Smith is the designer for the player-side components of the game-*Timelords*. More specifically, he created the axe, the sword and shield, the gun, and the energy gun for the player, along with the animations sound effects that go along with it. He has placed in items in the game that provide health, ammo, and power-ups, including invulnerability, double-jump, infinite ammo, and infinite sprint. Now, he is currently working on fine-tuning the animations, balancing the stats, and fixing bugs

Harold Sullivan
Level Design – WaterGate
Harold Sullivan worked on the game *WaterGate*. His primary focus during the game's development was Art/ level design. His duties, consist of creating various levels with efficient and smart design, helping create a visual narrative, and curating the color, music, and visual graphics that will make up the overall flesh of the game. Outside of environmental design he also worked closely with character design to help create various character models that you see in the game. Finally, he worked in combination with the programmers to create viable environments that provide room for manipulation to the players gameplay such as environment interaction, lighting, and even animation of various objects and models."

Caleb Corbin
Watergate: The Inside Scoop
Watergate takes place at the Watergate Hotel and Business Complex. The main character, Frank, works there as a janitor. One night, he receives a random phone call that turns out to be Richard Nixon. Tricky Dick asks Frank to help him get intel files for him, and Frank obliges. In order to help Frank along his journey, we have been working on many of the key components of the game such as a dialog system, the puzzles to gain access to a key card, the mini map, and a GUI for the inventory. Corbin has been working on creating assets and UI components such as story writing, background music, the mini map, and inventory.

Ricky Vallejo
UI and Level Design in Time Lord
Ricky Vallejo from Continuum Games jobs included UI Design, Level Design, and modeling and animation. He has made the UI in game, *Time Lord* and most of the level design and models that you see in the *Cretaceous* maps that feature dinosaurs and some basic terrain work. This action rpg is about a being known as the *Time Lord* whose job is to protect the many gates that lead to different time periods, from corrupting and keeping order. By going in the gates and defeating the boss that is corrupted, the time period is safe.

SAGE SESSIONS

Kyle Colquitt
EPCA
Colquitt will present how the games Main Features and the craft of individual levels for each area of the game. He will also address a few extra features to the game as well as level requirements. The featured level is set in contemporary Egypt. It involves the player going back in time similar to how in Assassins Creed use the animus to control a person from a time in the past. The player's main goal is to retrieve an ancient artifact that someone left in this zone and it is causing creatures that shouldn't exist to appear in the area. If left unchecked this could mess up the timeline. aYour task is to eliminate all enemies in the area to successfully progress to the end of the tomb. Colquitt's level is mostly focused on combat and exploration. His main goal with this level is to really introduce the player to the different areas and time periods one could go to in this game.

Jeremiah Dixon
Level Design
Dixon will present scene or level that he has created. His project consist of a zombies in "Left 4 Dead." The instruction for the game is one must get to one point of the map to the other, where a helicopter is, in order to win. The object will have guns to shoot enemies and zombies. The zombies will be able to spawn. Another mechanic is that there are places which contain health and ammo boxes where you can replenish your heath and ammo throughout the game.

Kenny Ingram
Level Design and AI
During this presentation, Ingram and his team of 5 will demonstrate the development of a game based solely on a single word or phrase that was chosen before development began. With this word in mind they set out to not only build a 3-Dimensional first-person perspective game, but to show that they could each create something unique within the confines of the requirements as well as tie everything together thematically. Using the Unity game engine and the C# programming language they were were able to create a portion of the game set in an Alternate Earth version of Feudal Japan. Alpha testing provided some very promising results as most of the players enjoyed the first iteration of the mechanic. Moving forward, at this moment, there is still a lot of work to be done on smoothing out the gameplay to provide a better experience.

Awards

Oral Presentation Awards

Award of Excellence
Highest Recognition Award
Best Recognition Award

Poster Presentation Awards

Award of Excellence
Highest Recognition Award
Best Recognition Award

The award recognizes undergraduate oral, poster presentations and creative endeavors characterized by excellence in research and in clarity of design and presentation within the following categories: STEM, Humanities, Social Sciences, and Creative Endeavors. Judges are composed of CSU Faculty and students.

Tower Day 2019