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York University

# Digital Media End of Year Show

Toronto Media Arts Centre  
April 17th - 24th, 2019



e m e r g e n c e

**York University**

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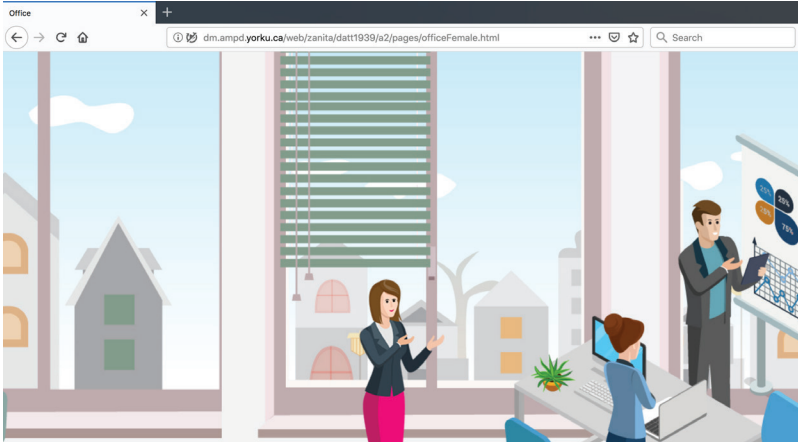


**e m e r g e n c e** consists of the highlights of some of the best and most innovative work created by Digital Media students at York University from Fall 2018 through Winter 2019. It was hosted at the Toronto Media Arts Centre, and curated by a team that included members from the Toronto Media Arts Centre and InterAccess.

Digital Media is a joint program between Computational Arts (School of Arts, Media, Performance, and Design) and Electrical Engineering and Computer Science (Lassonde School of Engineering) that mixes arts and media with engineering. In the program students use code and programming as tools for creative expression in forms such as immersive and 3D environments, interactive performance, data visualization, games and apps.

The selection of works presented here are representative of students from across our program, ranging from years one through four of the Undergraduate program, and work from students in the newly launched Masters program. The works presented here are in a wide variety of mediums and formats. From web-based, to electronic, to mixed reality, the common thread to most of these works is the computational basis in their conceptualization and realization. Most of the works presented here use content that is generated in real-time using algorithms as their creative toolset. All of the works embody computational thinking and aesthetics in their execution that include systems-based methodologies, hybrid art, and *emergence*.

# FA/DATT 1939 Making Interactive New Media Art



## Today

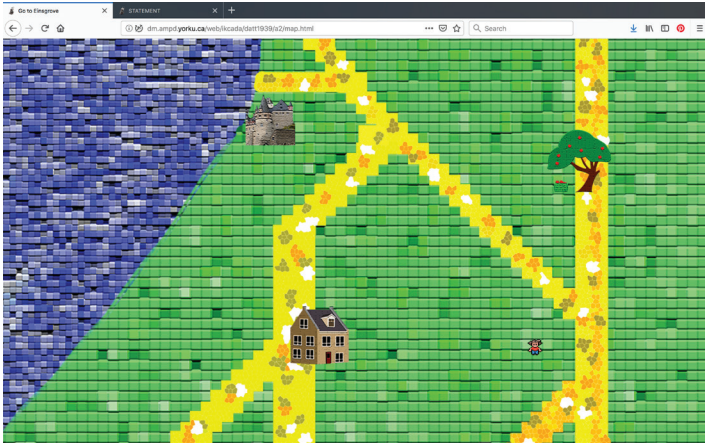
Hiba Faisal, Hong Pham, Anita Zeng

An online website, using CSS, JavaScript and sound.

Our project explores the issue of gender inequality in everyday life. At the beginning, the player will be asked to select the option of female or male, and their response determines the events and interactions they are faced with throughout the story.

The two characters exist within the same universe and are often seen in each other's scenes, however, when the player experiences the game through the male character, they are oblivious to what is happening to the female character. In the public transit scene, the male character notices she is upset but brushes it off. In the workplace, the female character being pestered by her supervisor is out of view unless the player chooses to walk to the left of the scene and, even then, they appear to simply be having a conversation. While shopping, the male character does not interact with the female products or note the inequality in prices.

This reflects the real-life ignorance or indifference that often exists in issues of inequality-not just of gender but racial and economic. When you are a part of a privileged group, it is easy to be oblivious to the hardship of others. We thought it would be interesting to have the player only grasp the message once they have played through the female character's perspective and put themselves in the shoes of someone on the disadvantaged end.



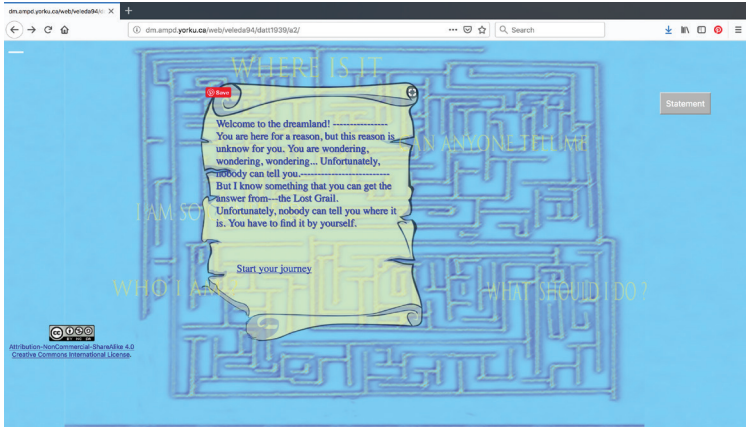
## The Game of Life

Qingyi Deng

An online website, using CSS, JavaScript and sound.

The purpose of my project is to create a game-like art reflecting our life experience. I think our life can be viewed as a kind of game. But this game is distinct from usual game because many rules are unknown to us and we often feel lost about which roles we exactly play. Then we tend to ask others for the answers. but how many suggestions and rules passing through our life are really reasonable? This work is like a story about exploring such confusion and looking for the answers. It is also like a journey struggling with rules and seeking for freedom.

This story could be very fictional, but you may also find some reflections of reality. I tend to use symbolism in this work, and I feel it is better to not explain all my ideas behind this work because I personally think a good story is supposed to be open for different interpretations.



## HEROIC ERRANDS

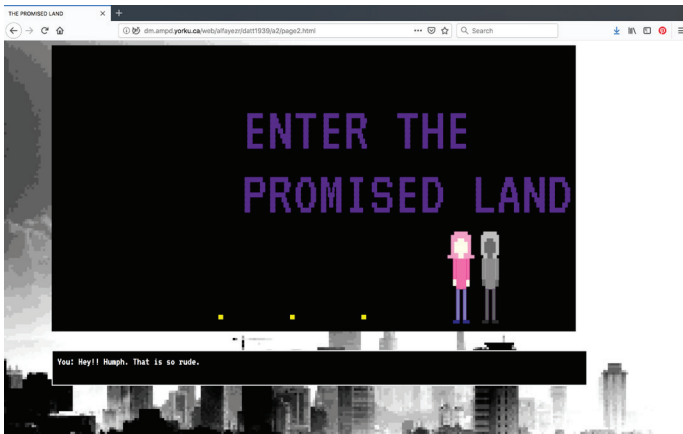
Christian Kakuru Nyataguza, Harith Chaudhary, Jian Tan, Isis Cada

An online website, using CSS and JavaScript and sound.

We have constructed an adventure RPG style game that incorporates various fantasy RPG trappings such as travelling across an overworld map, as well as menial tasks in the form of side quests.

It is intended to act as a parody of classic RPG tropes while also serving to draw some parallels to our real lives. By keeping a more traditional structure but with a subverted narrative we can create a parody of the classic fantasy adventure story. The usual structure of fantasy RPGs is a procedural approach with the protagonist having to complete many side-quests in order to be strong enough to face the major villains. By turning that on its head by having the side-quests being the actual journey we can present a familiar concept in a non-traditional light.

The player plays as the protagonist playing the hero, and in turn both the player and the protagonist are played, having been given a message or lesson throughout the course of the story which is only revealed upon completing it. Using Bogost's idea of procedural rhetoric (125) we can deliver Sicart's message on the importance of play (4-5) and the need to balance our seriousness with playfulness.

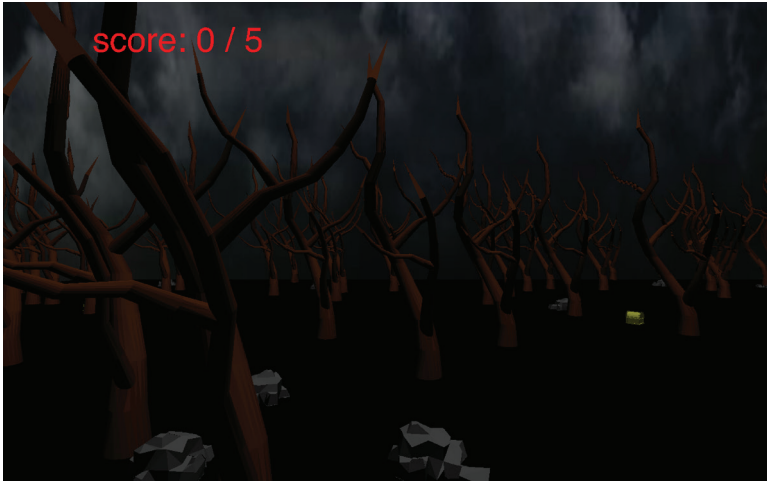


## The Promised Land

Rana Al-Fayez

An online website, using CSS and JavaScript and sound.

The Promised Land is a narrative mini-game that walks the player through an immersive, and often frustrating experience. No clear instructions are provided at the onset of the game; the player is immediately thrust into the virtual reality and attempts to find meaning through their search of a 'Promised Land.' At its core, The Promised Land is a study in imagination and a search for meaning through the everyday repetitiveness and nuances of life. The game is quite and contemplative; the actions required throughout are simple, however the process of extracting meaning is much more involved and time-consuming. In essence, the game attempts to create two distinct realities in the game: the 'real,' where you are forced to engage in simple and repetitive tasks to obtain 'currency,' and the imaginary, where you have the opportunity to think beyond what is presented directly in front of you, be creative and amuse yourself. The game forces the player to repeatedly engage in monotonous life actions. Each time, they are forced to think about it in a different way, exaggerating them and appropriating their context. The ultimate goal of the game is finding moments of meaning in the existing structure of life, represented by the rules of the game.

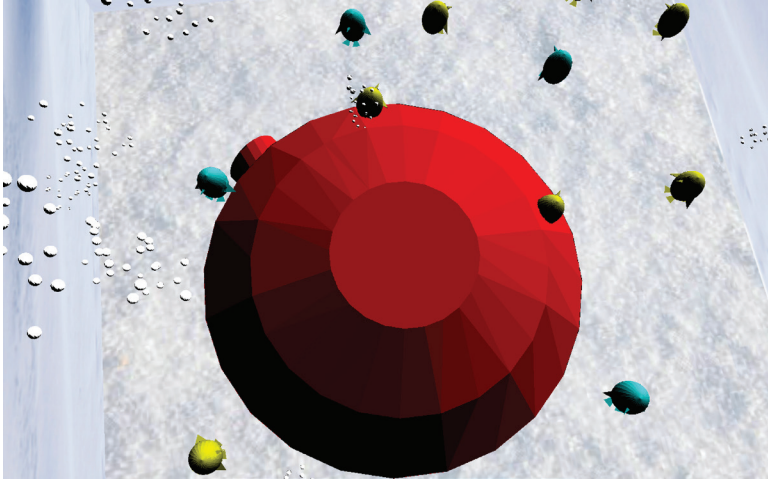


## Finding The Treasures

Eric Lin, Hao Xu

This is a game that sets the user into a forest (at night) looking for five individual pieces of treasure, all while being chased by a monster. The player wins when they have collected all five pieces of treasure and loses if they have been caught by the monster before then. The world size is very large and filled with trees and rocks that are placed in new random positions each time the game runs. The player's current score is tracked so that they know how many treasures they have acquired so far. At different parts of the game (when the player has collected specific amounts of treasures), the player moves slower for each additional treasure they collect. The monster will always move towards the player's current location. One concept that our project uses is AI, more specifically reactionary AI. The monster reacts to the player's movements. This in turn makes the monster behave differently depending on the player's location around the map. The monster is set to reach the player within a set amount of time. That amount of time is determined by this equation: distance between monster and player, divided by player's current speed.

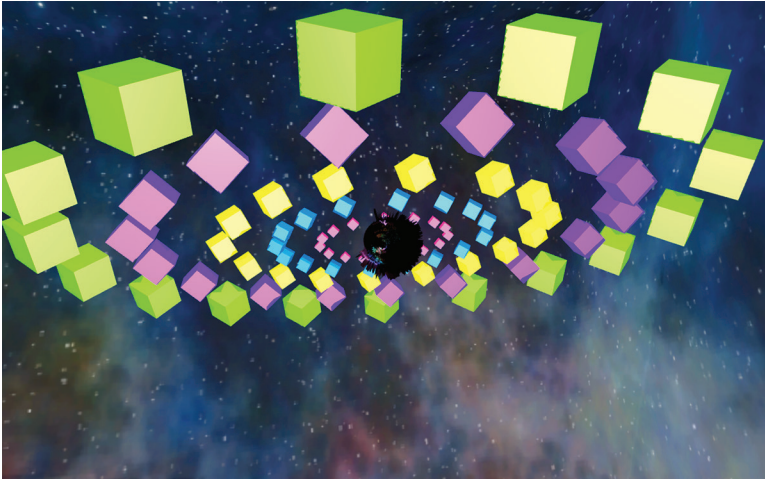




## Untitled

Courtney Binnie, Tommy Lam, Catherine Lombardo

Our project depicts a snowy nonsensical winter landscape. Within the project, an igloo plays music while penguins run around it and flurries of snow travel throughout the air. The user views the landscape from three different vantage points but can also navigate with their keyboard and mouse/mousepad. The igloo is placed at the center of the floor of the world. The penguins move in random directions around and through the igloo, occasionally leaving the ground. The world depicts the snowy landscape one would expect to find in Antarctica. The snow models travel in random directions, entering and leaving the world without restraints, giving the impression that they are travelling further out into the landscape. The random directions the snow travels mimic how real snow behaves when caught in random gusts of wind. The igloo emits party music, while the penguins emit honking noises. The snow travelling throughout is silent. The igloo is meant to be suitable in size for penguins. The penguins start off gathered inside, all simultaneously exiting the structure to run around as the music plays. In their rush of "excitement," they occasionally leave the ground, flying up into the air for a while before being sent back down.



## Waving Colour

Jiahui Han, Haiyu Wang, Changyuan Huang

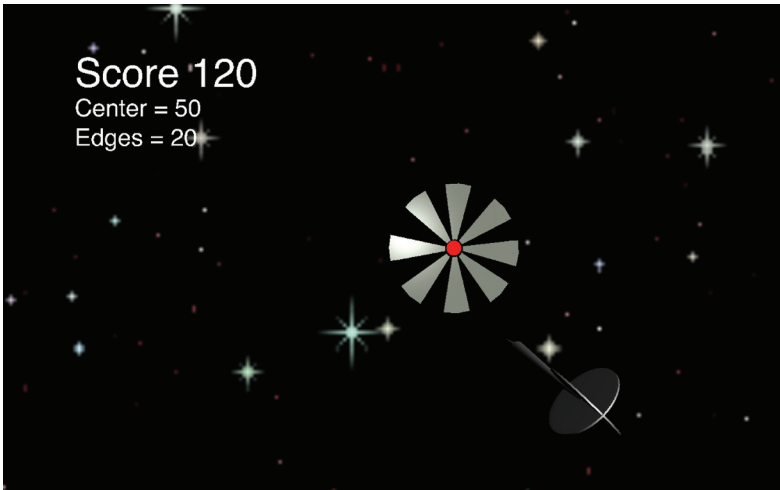
The project is a visual music with skybox as a background and set some vivid models to express the music in a 3D world. The music is in the style of electric dance with rhythmic beats in order to make our work more active and dynamic. We used two cube maps to create different scenes as well as 3D models. We made several small models and lined them up in a circle such as to put them into a group, which would be efficient for controlling and arranging them. As a result, we have five different sizes of ring shape group objects that were combined by different attributes of small models. There is one object in the center of the scene surrounded by these 5 rings, and we applied VTF heightmap on this model's texture so that the signal output from the audio can transfer to the visual effect on surface of this object. The 3D models are organized to dance and transform alongside timed triggered events based on the structure of the song. The camera has been pre-set to different locations during the duration of the song such that the audience can watch from different perspectives.



## The Endangered Species Museum

Aubrey Mae Obra, Yuze Chen, Ademola Adenekan

The concept of our final project is a fictional interactive world that begins in a Museum. Our initial goal was to create a forest with many species of butterflies. The museum features very diverse, endangered tree types, each species is found in differing regions in the world and have a unique and interesting backstory. The trees we featured was the African Baobab, the Monkey Puzzle, the Loulu, the Dragon Tree, and the Pau Brasil. In addition, the museum features two of the largest land mammals that are in danger of extinction, the Rhino and the African Elephant. The goal is to enlighten the user of very serious and real issues that affect our current ecosystem and biodiversity. The home button allows the user to start again in the beginning, somewhat the tutorial/ introductory stage. The arrow allows the user to teleport to the tree exhibits in order; One being the African Baobab, two being the Monkey Puzzle, and so on. However, the user is not limited to only teleportation, and have the option to move in the museum whilst maintaining the function of the buttons.



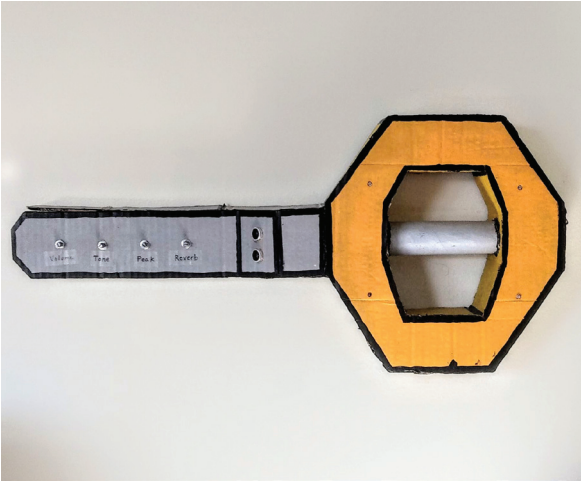
## Darts

Artur Komissarov , Noura Alwan, Harmeen Kaur Saini

FA/DATT 1000 - Introduction to Interactive Digital Media

The game consists of three different levels, the difficulty increases upon each level based on different factors. The first level, the dartboard will be centered in the middle of the screen, whereas in the second level, the dartboard will move along the x axis, and will move along the x and y axis in the 3rd level, which creates a zigzag pattern. The player decides the x position of the dart during the beginning of each turn, while the use of a "power bar" will determine the y position. The power bar is activated by pressing the space key after choosing the x position. This will simultaneously decide the y position and throw the dart. To win the game, the player starts with a score of 200, with the objective of getting it down to zero, by hitting the dart board successfully. Hitting the centre of the dartboard (bullseye) is worth 50 points, while the outside slices are worth 20. Once 0 is reached, the game will level up automatically with a different background, and added difficulty as discussed previously. Once all 3 levels are completed, a timer representing time taken to complete all 3 levels will pop up, presenting a challenge to the player to beat their previous score.



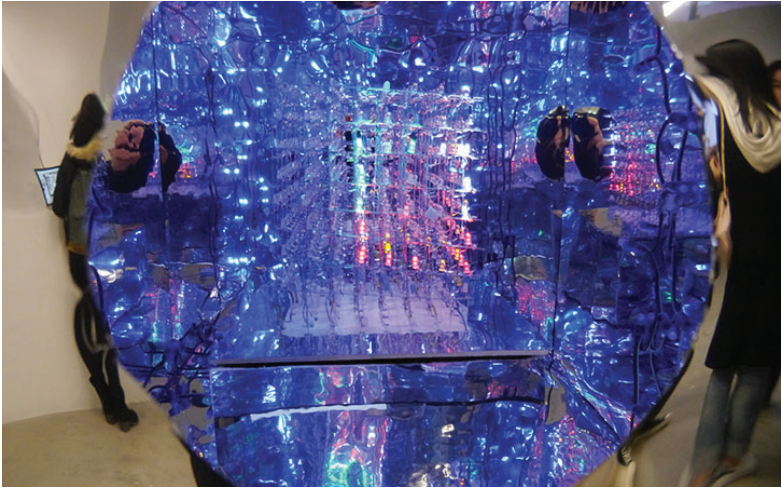


## Keyblade Synthesizer

Faadhi Fauzi, Dolgormaa Battur, Brady Rhora, Keon Rastgoo

Musical instruments (particularly Western ones) have historically been based on binary systems: press a key, pluck a string, hit a drum. Despite all the minute expressions one can create with traditional instruments, its bare foundations deny increments that contradict its hypothetical ruler of playability.

The Keyblade Synthesizer is an exercise in accepting the idiosyncrasies in expression. At the core of the instrument, four photoresistors detect variation in light and relay the information to an Arduino microcontroller. Through Max MSP, the signal is processed to produce four separate waveforms. Optionally, an ultrasonic sensor can be used to manipulate pitch. Four knobs control volume, tone, reverb, and scale. By manipulating light as a universal constant, the player reaches into the non-binary space between silence and sound.



### **Mirror World**

Ziyu Zhong, Dongcheng Wu, Xiangyue Meng, Jiaqi Yao

Our project is an interactive visualization project. It is a closed mirror box and controlled by the wearable device — a glove. Audiences could have immense experience and interact it by using the glove. There are two parts in this project: mirror room and wireless glove. For the mirror room, we use mirror paper to create a distorted reflect vision, it decorates with RGB LED strips and an 8\*8\*8 LED cube in the middle. Speaking of the wireless glove, there are 4 flex sensors and one orientation sensor on the glove which could detect the user's hand gesture and movement. When users do different gestures, the environment in the mirror room would change and present different light modes. As for the main technical parts of our project. First part is LED cube and strips which we use an Arduino Uno and 9 multiplexers to control both LED strips and the cube. For the glove, we use an Arduino Lilypad and several sensors to detect user's hand gesture then use Wenkinator to train the computer to send a different instruction from Max8 to Arduino when users do certain gesture.



## Breathe Forest

Weiyin Huang, Yafei Huang, Rongyi Liao, Jiangliang Sun, Dolgormaa Battur

Breathe Forest is an artwork integrating interactive visualization which transforms data from its surrounding environment. The central part of our project is a tree whose crown consists of a few LED-lights. The color of each LED-light depends on the data from an MQ 135 air quality detector that is sensitive to the density of PPM and CO<sub>2</sub> in the air. When the air quality of the surrounding environment is excellent (the value from the Air quality sensor is low), the lights on the tree stay green, which makes the Breathe Forest look quite peaceful and healthy. When the air quality goes worse (the value from the Air quality sensor becomes high), the lights turn into red. Breathe Forest's aesthetic is very intuitive, and it brings more awareness of air quality change to the audience. Besides, flowers are attached to a pager motor which is controlled by a humidity and temperature sensor. The pager motor was placed beside the tree. When the sensor notices the humidity and temperature increase, the rotation of the pager motor rapidly speeds up. Our purpose of creating the Breathe Forest is to draw people's attention to some environmental issues such as global warming, acid rain, and air pollution.





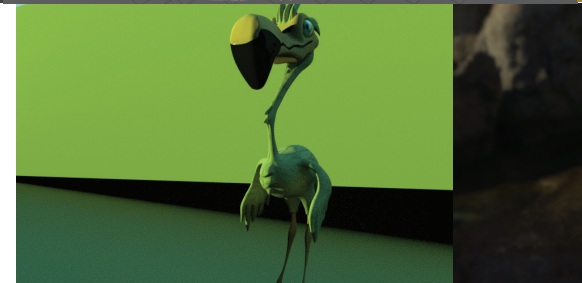
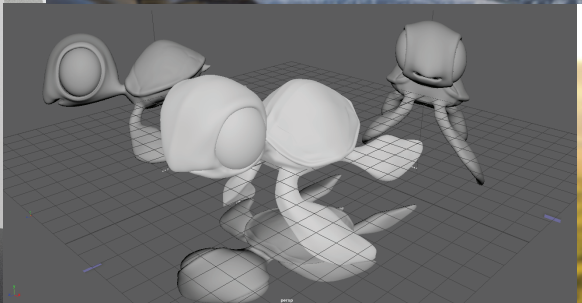
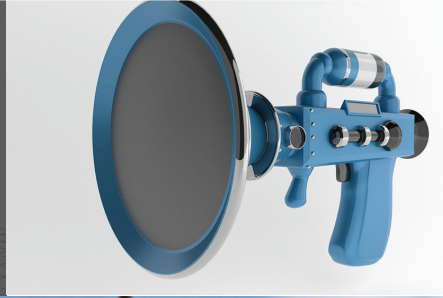
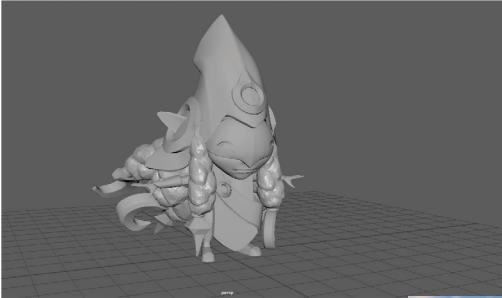
## **[DISTORTION]**

Alexis Wspanialy & Kathryn Bower

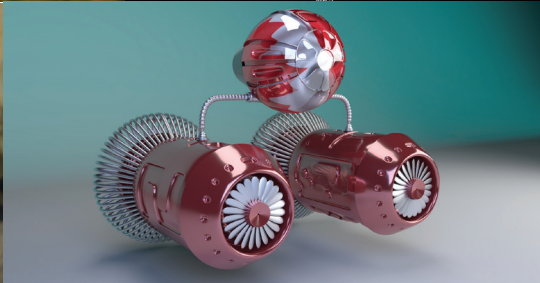
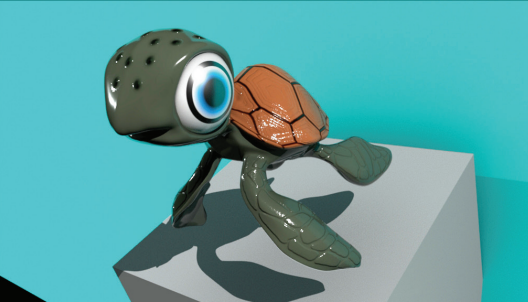
[DISTORTION] is a wearable physical computing work, and includes a mask, shoulder armour and gauntlet. [DISTORTION] uses biosensing, light displays, and voice modulation to mask the user's face and voice, but simultaneously reveals intimate details of the user's being by displaying their pulse and physical connections. By design, certain elements of communication are complicated and made extremely difficult. The mask renders the user's vision almost useless, and the voice modulation prevents the user from speaking clearly. However, [DISTORTION] brings out other features of a user's state which are impossible to see in normal, corporeal interactions without technology. Light displays in the arm create bright flashes in response to the user's physical touch and grip using the gauntlet. In this way, what the user is currently occupied with is broadcasted, even if they try to hide it. Lights in the mask blink to the rhythm of the user's pulse. A person's pulse can be considered as something personal: it can disclose information on their physical, mental, and emotional wellbeing. In certain situations, it may be information that some will want to keep private.

# FA/DATT 2500 - Introduction to 3D Modelling

DATT 2500 provides a foundation in 3D modelling using state of the art render time 3D modelling software such as Maya, Blender, and 3DS Max. The course will provide a survey of various modelling techniques and approaches with an emphasis on modelling used in 3D art, 3D animation and games. Topics include photorealistic rendering, scene building, character modelling, and the use of 3D graphics in simulation and visualization.



Works by: Tamsyn Ballantyne, Emily Ngsee,  
Carter Pang , Joshua Cabrera, Paco Lui, Jiajun Xu, Jiaming  
Zhang, Shuky Badeer, Riyuan Zhuang, Kori Skeffington,  
Arman Pourshadi, Rachel Hershkop, Yodhin Singh,  
Krista-Anne Marquez, Yuan Yu, Tyler Rosen





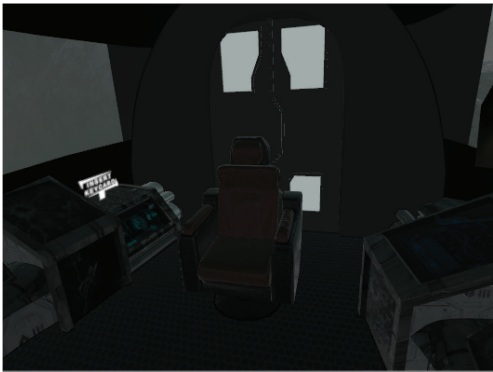
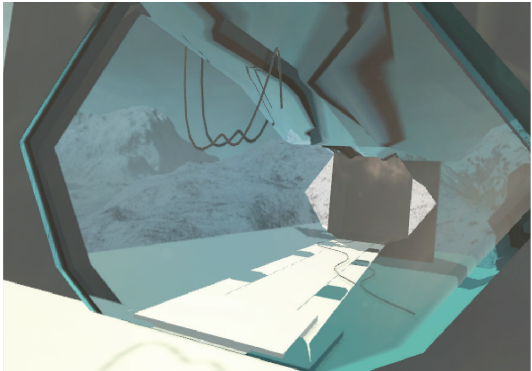
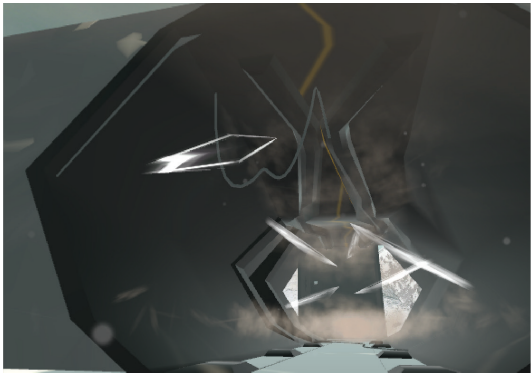
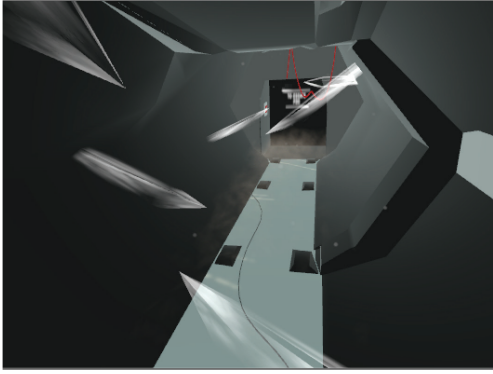
## Planemo

Filiz Eryilmaz, Kristen Grinyer, Tristan Hafkenscheid, Tristan Linderman, Ryan Martin, Tobi Matilukuro

Description: The purpose of this game is to use psychological principles of bodily ownership and bodily agency to develop a strong sense of “embodying” the game’s avatar. The game should be fun and engaging. The ownership and agency aspects should be testable (through in-game questionnaires and in-game behaviours). The game should also include the standard control conditions which break the sense of ownership and agency. The game will serve as a tool for research purposes such as: a) testing proteas effects caused by different avatars, b) treating phantom body parts in amputees, and c) addressing empirical questions about the role of avatar realism in perceptions of ownership and agency.

Systems: This game was developed and tested on the Oculus Rift but is playable on any virtual reality system. The user will need a VR headset and two standards controllers. In the future, to enhance the user’s immersive experience, and help induce their sense of ownership over the virtual avatar they play as, this game will utilize small, vibrating tactile sensors that are placed on the user’s hands, arms, and body. These tactile sensors will not be necessary to play the game, although, the use of them will be encouraged to aid in the research aspects of this project.

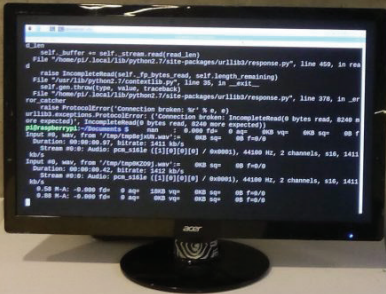
[www.planemothecrashedspaceship.wordpress.com](http://www.planemothecrashedspaceship.wordpress.com)



## Threadbare

Raechel E. Kula

\_ThreadBare is an artistic exploration of the current status of the usage of #metoo on Twitter. The piece monitors the MeToo hashtag in real time and processes user supplied location and text information to animate an item of clothing that would have been donated by a survivor of sexual violence. Background audio is taken from a TED talk given by Tarana Burke, activist and originator of the MeToo movement, and is interrupted with sampled recordings of celebrities and public figures saying the words "me too" each time a tweet is posted with #metoo. While running \_ThreadBare collects Tweets in real time on the RaspberryPi via the Tweepy Twitter API utilities for Python. The Twitter user's self defined location (on their public profile) is used to acquire latitude and longitude coordinates. This location information is quite whimsical at times since it is completely user defined and users are free to be conceptual in their responses. (eg. "God's green earth", "mars", "Climbing my own Everest"). The latitude and longitude values determine which strands of LEDs are illuminated and the length of the text of the tweet is used to determine the brightness. The goal of this piece is to convey some of the wonder at the ongoing, regular and non-stop use of this tag and to inspire conversation and thought around it's continued relevance and significance."



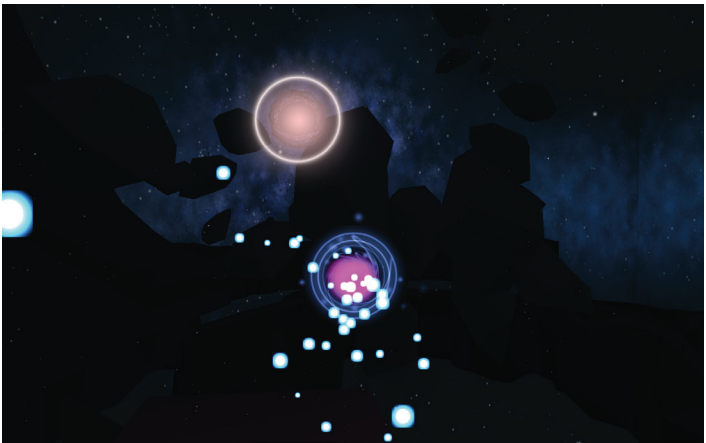
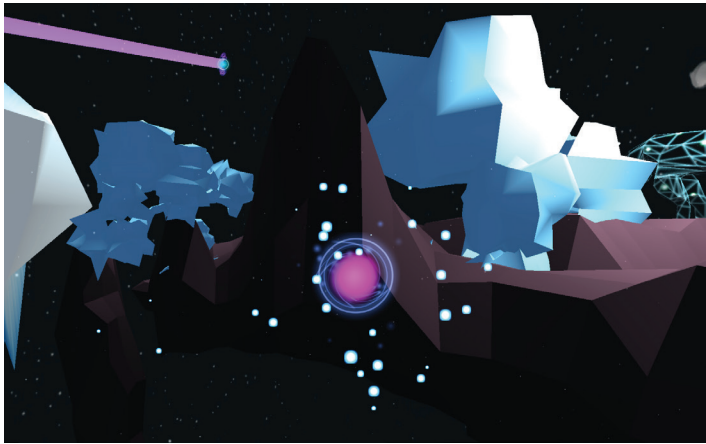
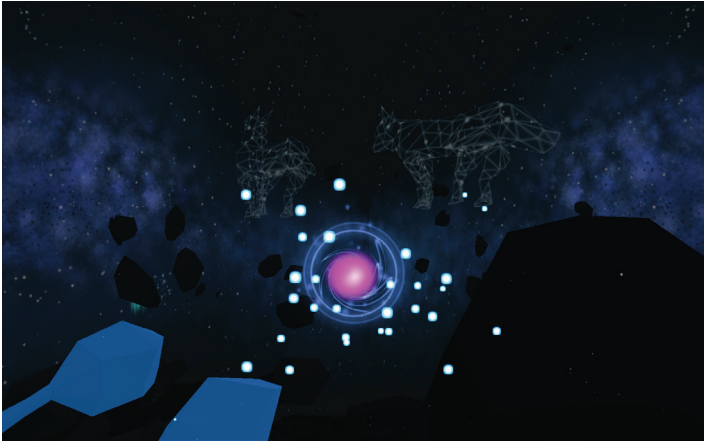
## **Inlustris**

Ann Jeanette Arizapa, Kadia Gregory, Thomas Nguyen, Anas Chohan, and Greg Wong

Inlustris is about a lone star that travels through space in search of other stars. As this star travels, it finds out that the stars that it once watched glow in the distance are now dark and lifeless, surrounded by debris. However, not everything that this star sees is in ruins. In the midst of all this is a tree that once sustained the life around, but now that its disconnected from everything, it can no longer support its surroundings. It is now the star's job to bring a drop from this tree to the dead stars nearby in order restore not only the dead stars but also the surroundings.

The rest of the story is mostly up to the players' interpretations, so everything that the players see or experience in the game is not just to be taken at face value since each of them have a metaphorical meaning behind them



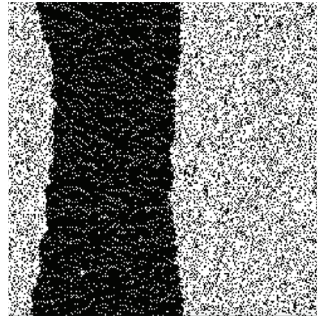
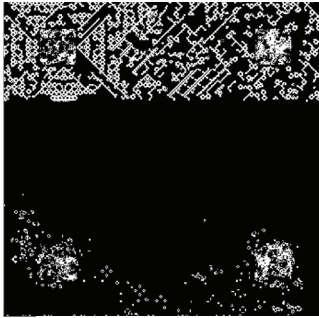
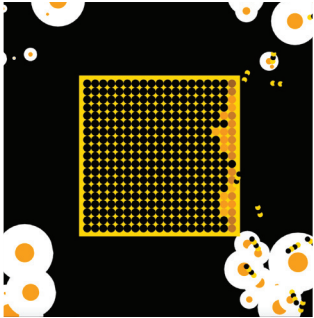
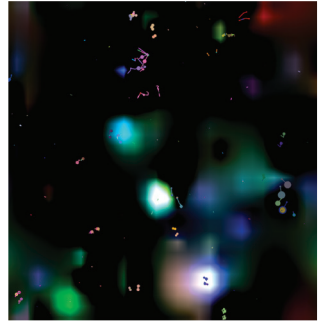
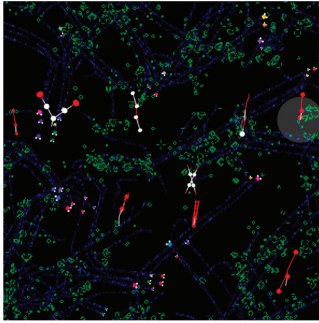
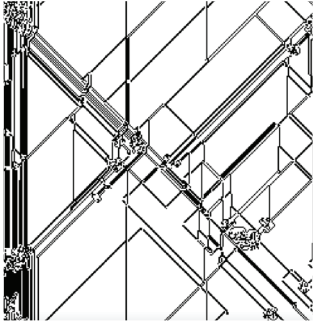
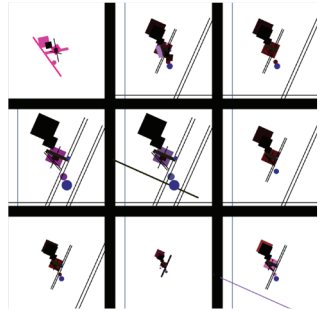
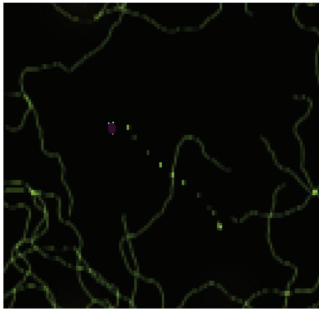
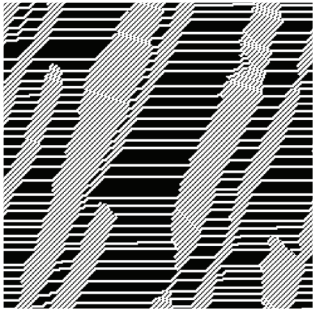
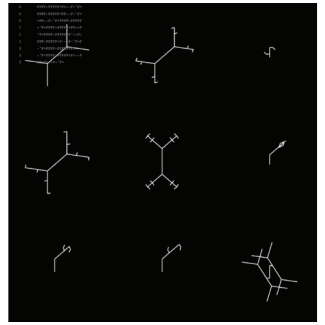
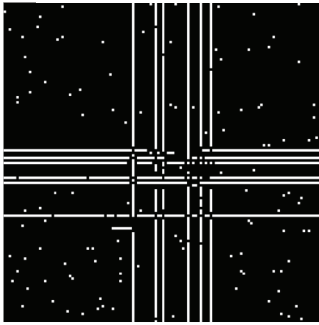
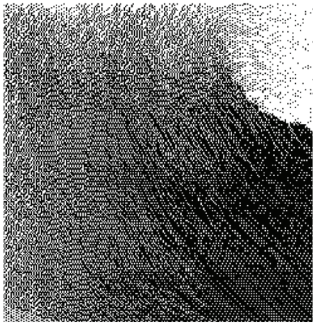


## **Selected works from DATT4950/DIGM5950: Artificial Life, Generative Art, Creative Code**

Artists:

Rostami Ravari Amirbahador, Chohan Anas, Ann Arizapa, Susan Choi, Malcolm Harriott, Milka Lijiam, Pail Liu, Zhouyang Lu, Hrysovalanti Maheras, Tony Nguyen, Andrew Sidsworth, Nicole Skrypuch, Jeremy Tantuco, Jackielou Tornato, Meng Nan Yang, June Yu

Artists have always drawn inspiration from nature, but until recently only rarely have they been able to leverage nature's creative mechanisms. From its origins computing has also found biological inspiration in pattern formation, self-construction and reproduction, intelligence, autonomy and collective behaviour. Autonomous complexity is thus one of the fundamental hallmarks of computational art; an integral message of the medium. Students in this course develop understanding of these developments from arts and science foundations, addressing computation as a creative medium from a biologically-inspired standpoint, and developing artworks and simulations inspired by the fascinating complexity of nature.



### **Dying to Live again**

Lex Moakler, Kemdi Ikejiani, Zhouyang Lu, Anas Chohan

*Dying to Live Again* is an interactive audiovisual installation that uses motion capture to explore the ambiguity between presence and absence. Participants are shown a virtual graveyard where their movement is represented in real-time as a ghostly figure. The movements of recent participants can be revealed whenever the current participant's ghost touches a virtual tombstone. Living animals are shown in the graveyard to evoke the concept of a liminal space between life and death, inviting participants to relate these concepts of 'in-betweenity' to new forms of partial presence. The finished project was developed in Unity and uses data from a Kinect v2 sensor for input.

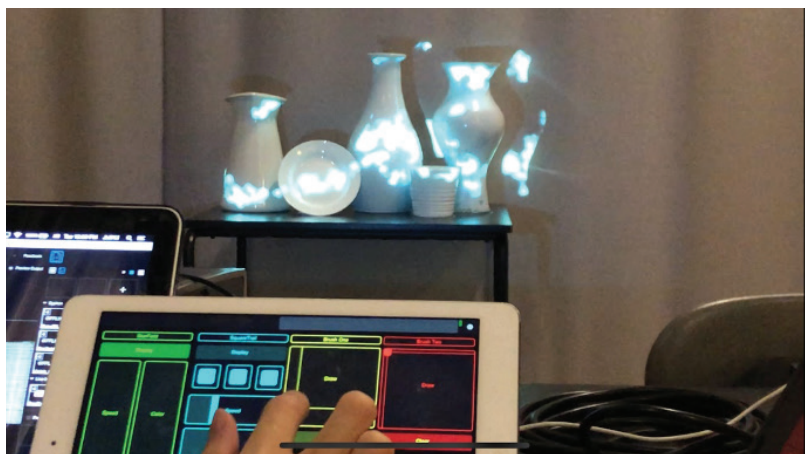
There are two main parts of our project that we hope the participant is able to observe: the present and the past. The present is a straightforward process of showing the participant a reflection of themselves. The second part, the past, enables the participant to view previous actions. The finished product explores the aesthetics of ambiguity in relation to past actions—whether they are from the participant or predetermined. The technical process we used to achieve this involved storing the coordinates of the user's motions in a text file, and later reading it in real-time.



## **Porcelain (瓷)**

Yue (Jason) Chen, Zhuoxuan (Jeff) Li, Aolin (Ken) Zhu, Mohamed Saleh

瓷 is a digital media art project that involves projection mapping on surfaces of a set of Chinese porcelains. Choosing Chinese porcelains gives rise to a more expressive and creative way of displaying a repository of visual effects that are made and used specifically for the purpose of this project. We have used different software such as Adobe After Effects, MadMapper and Processing to generate the visual effects and animations. Adobe AE animations are associated with the ancient Chinese society, philosophy, religion and aesthetics, whereas Processing is used to create visuals that represent the variety of the modern sense and methods of art. This project involves two phases: an introductory live performance stage and an interactive stage. As the live performance stage is organized to present the historical background of Chinese porcelains as well as a series of animations made in Chinese painting style, the second interactive stage allows people to interact with the visual effects in the real-time by changing a variety of parameters associated with them. Communication is built among the software components with a standalone control interface called TouchOSC. Several interfaces are built to give people the capability of changing how the visual effects appear on the porcelains as well as drawing and writing with different kinds of brushes. We hope to allow people to add their customizations and artistic tastes and make them enjoy this process of creating their porcelain patterns in the interactive stage.



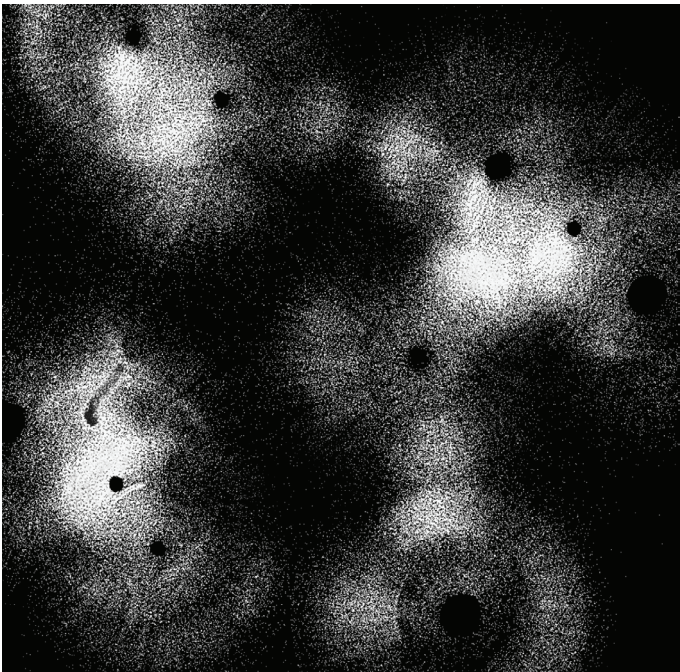
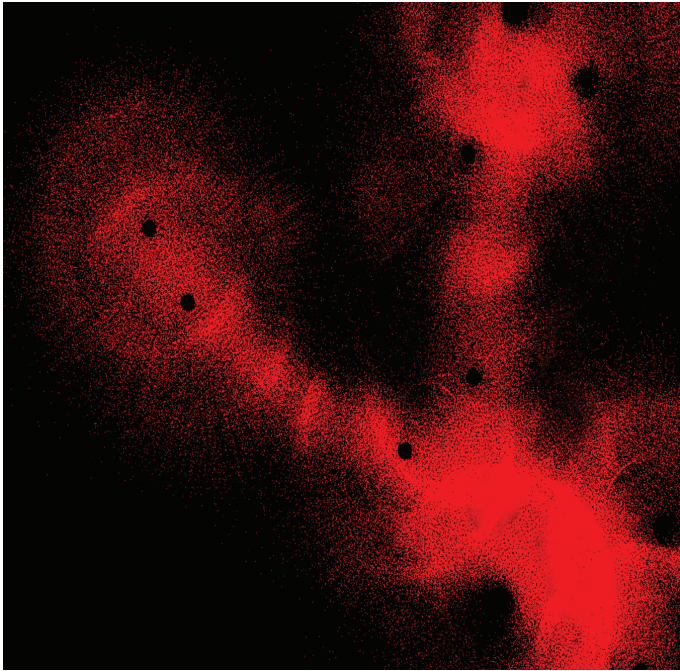
## **Physarum: Biologically Informed Algorithmic Structures**

Rory Hoy

Independent Project: Digital Media MA

*Physarum* is a generative art piece developed in JavaScript that explores the formation of structure over time through autonomous cells that search a randomized space of chemoattractants. The behaviour of these cells is inspired and informed by the expanding and consuming nature of slime molds such as *Physarum polycephalum*; the “many-headed slime”. Moving towards and engulfing these chemoattractants causes each cell to secrete a trail which other cells can then use to orient themselves towards an energy source. This in turn alters the reacting cell’s movement and response to each attractant, causing additional trails to be left for accompanying cells. After allowing the simulation to run, noisy but distinct and distinguishable paths are formed between each of the energy sources, and display of the recorded trails derived from environmental sensing of the cells unveil hidden complexities in their movement within each generated art piece.





## **Courses represented in this catalog**

**FA/DATT 1939 3.00**

### **Making Interactive New Media Art**

Introduces students with little or no experience in the creation of new media works to the issues and techniques that will enable them to engage critically and creatively with the area. In the relatively short history of new media, a new language and tool set have become pervasive in the world of art making. This course provides students with an introduction to interactive new media. Using HTML, JavaScript, and Photoshop, students will engage with the web as a creative medium. Projects will be based in a variety of new media genres including net.art, blogs, interactive narrative, and randomness.

**FA/DATT 1000 6.00**

### **Introduction to Interactive Digital Media**

Introduces programming environments designed for creative use, such as Max/MSP. These will be put in practice by students in developing their own projects. Emphasis on cultural analysis about the important role that computational media have in the arts, as well as integration of key ideas and methods from computer science.

**FA/DATT 2000 3.00**

### **Introduction to Physical Computing**

Explores embodied approaches to combining hardware, software and materials to create art works. Students will be introduced to the world of physical computing: combining simple computers (e.g. Arduino), sensors, LEDs, motors etc. in physical forms. Prerequisite: Second-year standing or permission of the Instructor.

## **FA/DATT 2010 3.00**

### **Physical Computing II**

Builds on the material covered in Introduction to Physical Computing to explore new forms of engagement and interaction in specific areas including: wearable computing, wired and wireless communication, and instrument creation. Students will develop a larger work for public presentation. Prerequisite:

## **FA/DATT 2500 3.00**

### **Introduction to 3D Modelling**

Provides a foundation in 3D modelling using state of the art render time 3D modelling software such as Maya, Blender, and 3DS Max. The course will provide a survey of various modelling techniques and approaches with an emphasis on modelling used in 3D art, 3D animation and games. Topics include photorealistic rendering, scene building, character modelling, and the use of 3D graphics in simulation and visualization.

## **FA/DATT 3701 6.00**

### **Collaborative Project Development in Games**

The entire class collaborates on the realization of one or two ambitious game projects. Students will work together as a development team by taking on roles where they focus on specific aspects of the project (such as Director, Designer, Artist, Programmer, Level Designer, Sound Designer, Publicity). The development team structure is modeled on teams used in large-scale project development within fields related to games that rely on multi-stakeholder collaboration and interdisciplinary research. Projects may incorporate partnerships with York-based Faculties, Departments, or research teams depending on the focus of the project. The nature of the project will vary from year to year, but will be a significant work in the field of games. The Instructor(s) will prepare a general description of the project(s) at the beginning of the course. The details of the project(s) will be developed

as part of the class activities. As part of the project development and execution students will be expected to prepare presentations, posters, and a written paper. The culmination of this course will be a final presentation, which will be open to the public. In addition to group assignments, students are evaluated based on their individual contribution, teamwork, presentations, and other deliverables as appropriate.

### **FA/DATT 3935 3.00**

#### **Creative Data Visualization**

Explores data visualization as an artistic practice. Engage with interdisciplinary practices involving the mapping of data to aesthetic form, gaining inspiration from a wide range of topics as musical graphic/abstract notation, conceptual/instructional art, animation, social media analyses and computational sciences. Examines the database as a pervasive cultural and computer form. Students will learn how to manipulate and organize open source data, as well as engage in alternative forms of archiving. Through this hybrid process, students will work towards a summative data art project that is both aesthetically compelling and revelatory in its informational content. Course material fees required.

### **FA/DATT 4300 3.00**

#### **Game Development II**

Advanced topics in game development and implementation such as game engine techniques, game engine scripting, prototyping, player controls, and level design building on previous courses in game development and game mechanics. Advanced hands-on approach to the study and practice of games, gamification, and game play and their use in various applications, including video games, simulations, serious gaming, and art making contexts. Further explores new and cutting edge trends in gaming, such as in the areas of alt gaming, queer games, Not Games, and urban gaming where the potential and boundaries of games and game play are being challenged and tested.

## **FA/DATT 4950 3.00**

### **Artificial Life, Generative Art and Creative Code**

Explores computation as a creative medium from a biologically-inspired standpoint to develop artworks, adaptive media and simulations approaching the fascinating complexity of nature. Artists, composers, designers and architects have always drawn inspiration from nature, but until recently only rarely have they been able to leverage nature's creative mechanisms. From its origins computing has also found biological inspiration in pattern formation, self-construction and reproduction, intelligence, autonomy and collective behaviour. Frameworks explored in the course include complex dynamical systems, fractals, cellular automata, agent-based systems, evolutionary and developmental programming, artificial chemistries and ecosystems. The course is focused on practice in the arts, interactive media, and design: interactive audiovisual applications are implemented both in-class and through student projects, and are critically examined by interweaving the history, theory and landmark works in the literature of generative art, evolutionary music and art, and process art, as well as artificial life, systems biology, and bioinformatics research, and philosophies of process, creativity, and the aesthetics of nature.

## **LE/EECS 4700**

### **Digital Media Project (a.k.a. Capstone)**

This course involves the completion of a significant body of work in the area of Digital Media. The project will normally be a team project involving the development and analysis of a digital media work potentially having elements of interactivity, animation, 3-D graphics, and sound for example. The project will be presented at a public workshop towards the end of the year.

# ACKNOWLEDGEMENTS

We would like to thank everyone who helped make this year in Digital Media Possible:

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## **Teaching Assistants**

David Han, Ian Jarvis, Michael Palumbo, Brian Sinasac, Dan Tapper

## **Technical Staff**

Tim Hampton, Frank Tsonis

## **Administrative Staff**

Melesa Beharry, Dawn Burns, Rose LeCoche, Patrick Legris, Joy Ramond

## **Curators**

Henry Faber (TMAC), Mark-David Hosale, Megan MacLaurin (Interaccess)

Thank you to our students, including the Digital Media Students Association. And a special thank you to the Toronto Media Arts centre for co-hosting this event, and to Interaccess for providing support to our students as well as this event.

## LINKS

Computational Arts, AMPD, York  
<https://computationalarts.ampd.yorku.ca/>

Electrical Engineering and  
Computer Science, Lassonde, York  
<http://eecs.lassonde.yorku.ca/>

Digital Media Students Association  
<http://dmstudents.ca/>

Toronto Media Arts Centre  
<https://www.tomediaarts.org/>

Interaccess  
<https://interaccess.org/>

See current and past works by Digital Media Students  
in our online gallery:  
<http://dmgallery.apps01.yorku.ca/>

# Digital Media @ YORK

Games • Arts • Development  
Lassonde + Arts, Media, Performance and Design

