

“How does the twinkling light of Sirius A shape the space and time of our dreams at night?”



Instellar Dialog: Sirius A

What if the magnitude of Sirius A in the night sky is an agency of communication?

What if other potential lives on Sirius A manipulate our dreams to communicate with us?

What if we can decode those messages by speculating the potential patterns between the twinkling lights of Sirius A and our brain waves when unconsciously dreaming?

How can we respond to those messages?

Solo Project
Timeline: 3 months (2022)
Tutor: Dr.Andy Simionato & Dr.Karen ann Donnachie
Exhibited in RMIT University (2022)

The stars that we gaze upon the sky have travelled at the speed of light, for millions of years to enter our eyes. Sirius A is the brightest star in the night sky for observers on the earth. From the planet humans are standing, stars are seen as they were, not as they are.

Each second of the star light (300,000 km/sec) can be seen as an unique piece of evidence indicating the huge scale of time and space. This enlarges the potential of magnitude to transport messages.



Inspiration 01: Movie 'Interstellar'

The speculated five-axis dimension in the film includes three dimensions of the space, and fourth is the time. **The fifth is the emotion, story, the connection between humans.**

Social constructionism is the theory I've been studying. Society is built up from social interactions, connections. Nobody is an island in human society.

Those connections humans built within our own culture, travelling along the universe. Those bonds become an unique axis for human kinds.



Inspiration 02:

A Cyborg Manifesto: Science, Technology, and Socialist-Feminism in the Late Twentieth Century

by Donna Haraway

The translation of the world into a problem of coding, a search for a common language.

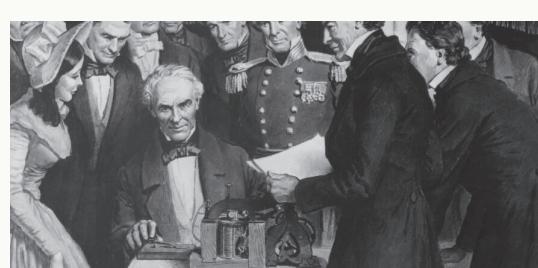
Our **best machines** are made of sunshine; they are all **light** and clean because they are nothing but **signals, electromagnetic waves**, a section of a **spectrum**, and these machines are eminently **portable, mobile**.

Information is just that kind of quantifiable element (unit, basis of unity) which allows **universal translation**, and so **unhindered instrumental power** (called effective communication).

Inspiration 03:

Technology and Ideology: the Case of Telegraph

by James Carey



Annihilation of time and space

Communication, exchange, motion brings humanity, enlightenment, progress and that isolation and disconnection are evidence of barbarism and merely obstacles to be overcome

The telegraph allowed communication to control physical processes actively.

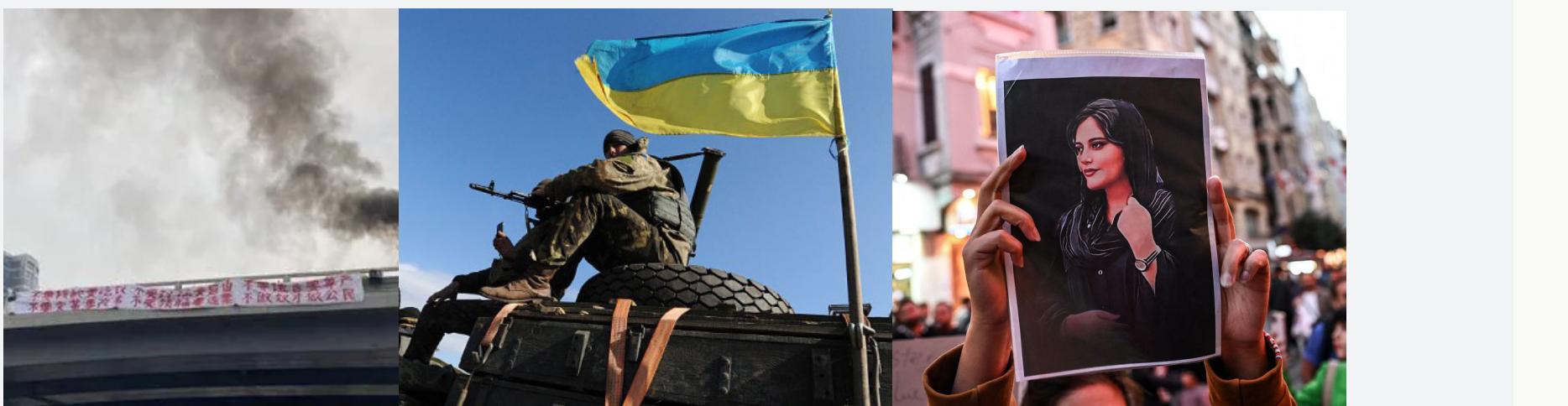
RESEARCH: Why Matters

I am extremely sad for people who are suffering from wars, injustice worldwide at the moment. The universality, inclusivity are indeed rooted within every piece of my work as I truly, heartfully believe

"people were people-everywhere were the same."

By exploring, decoding, speculating things that we are all under (sky, universe),

I would like to empower lives of all kinds.



Left: Rare citizen protest against communist party in Beijing, 2022 | Middle: War between Russia & Ukraine, 2022 | Right: Iran Protest: The death of Mahsa Amini, 2022

Events such as **Olympics**, groundbreaking **spaceship launch** and so on, empower all human-beings without any social identity.

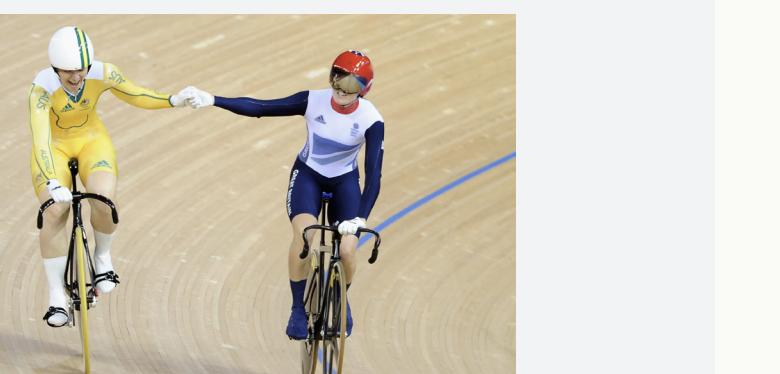
Universal moments as such remind us progresses that are relativley shared.

When we fight against each other, we are the ones to lose.

"The goal of the Olympic Movement is to contribute to building a peaceful and better world by educating youth through sport practiced **without discrimination of any kind** and in the Olympic spirit, which requires mutual understanding with a spirit of **friendship, solidarity and fair play**."



First man on the moon, Apollo



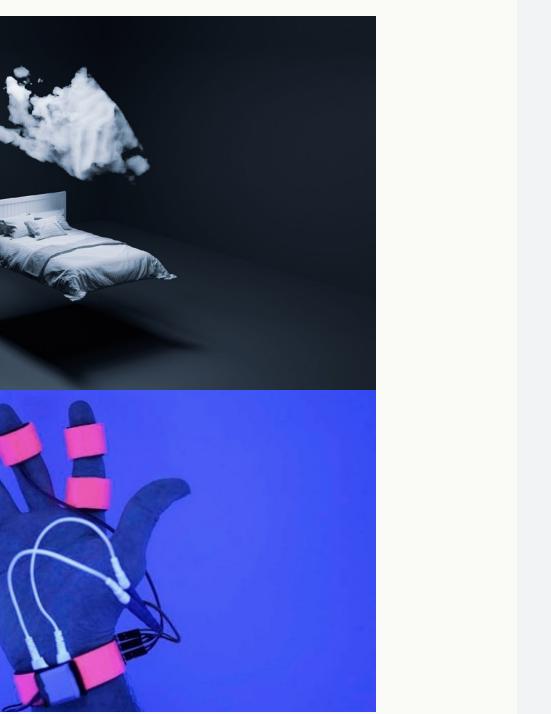
Olympics (2020), Tokyo

RESEARCH: Fields of Interest (Why Dreams)

Combining my own research interest in inclusive design and Self-determination Theory especially with a focus on autonomy studying, I am particularly interested in dreams.

We yet can not control what to dream about.

Where I would go?
What would I go?
How would I do?
What about others?
We don't know.
We can't control.



A Testing Machine Control Dreams: Dormio (MIT Media Lab, 2022)

Self-determination Theory

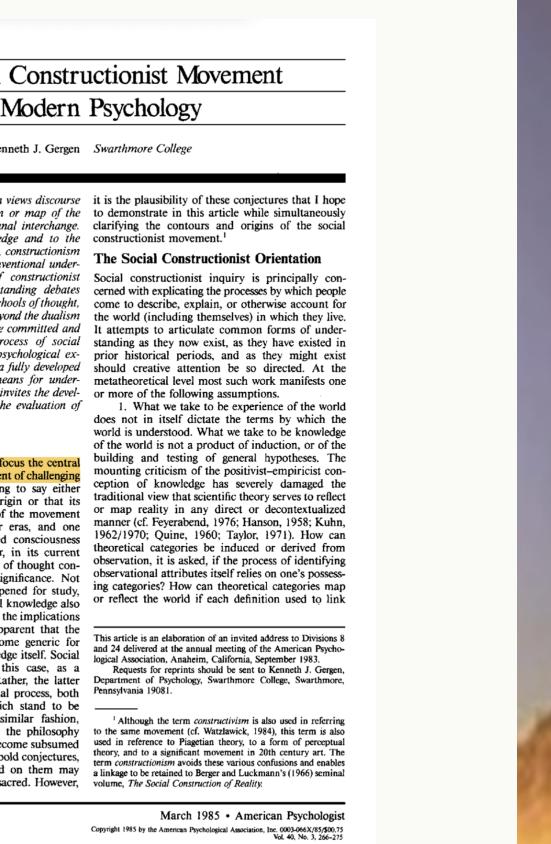
Social-contextual factors that promote feelings of autonomy and competence enhance intrinsic motivation, whereas factors that diminish these feelings undermine intrinsic motivation, leaving people either controlled by contingencies or amotivated.



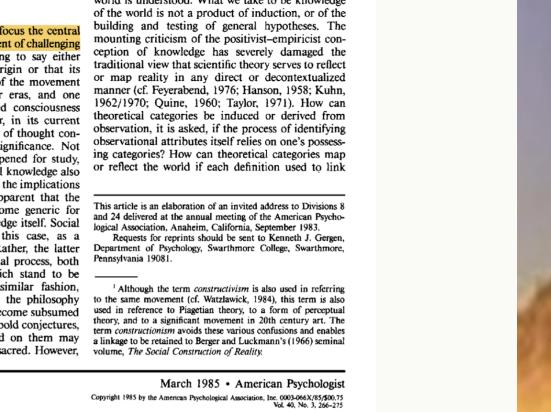
Social Constructionism

Inquiry into the social construction of self can roughly be divided into three categories.

The first is primarily concerned with establishing the **self as a social construction**. The second is focused on **specific social processes** in which the conception of self is embedded.



The third involves critical assessments of the cultural and political **outcomes of traditional beliefs in the self**.



Reading List:
1. Disengagement Theory: A Critique and Proposal (by Arlie Russell Hochschild) | 2. The Self as Social Construction (by Kenneth J. Gergen) | 3. The Social Construction Movement in Modern Psychology (by Kenneth J. Gergen)

RESEARCH: Sirius A (Why Sirius A)

Sirius A is the brightest star in the night sky on earth.

With the unignorable brightness of Sirius A, I speculate the magnitude is the agency of other lives on Sirius to communicate people on the earth.

Light can travel in space. Its speed is the known fastest way of travelling. This represents its potential to become an universal common language.

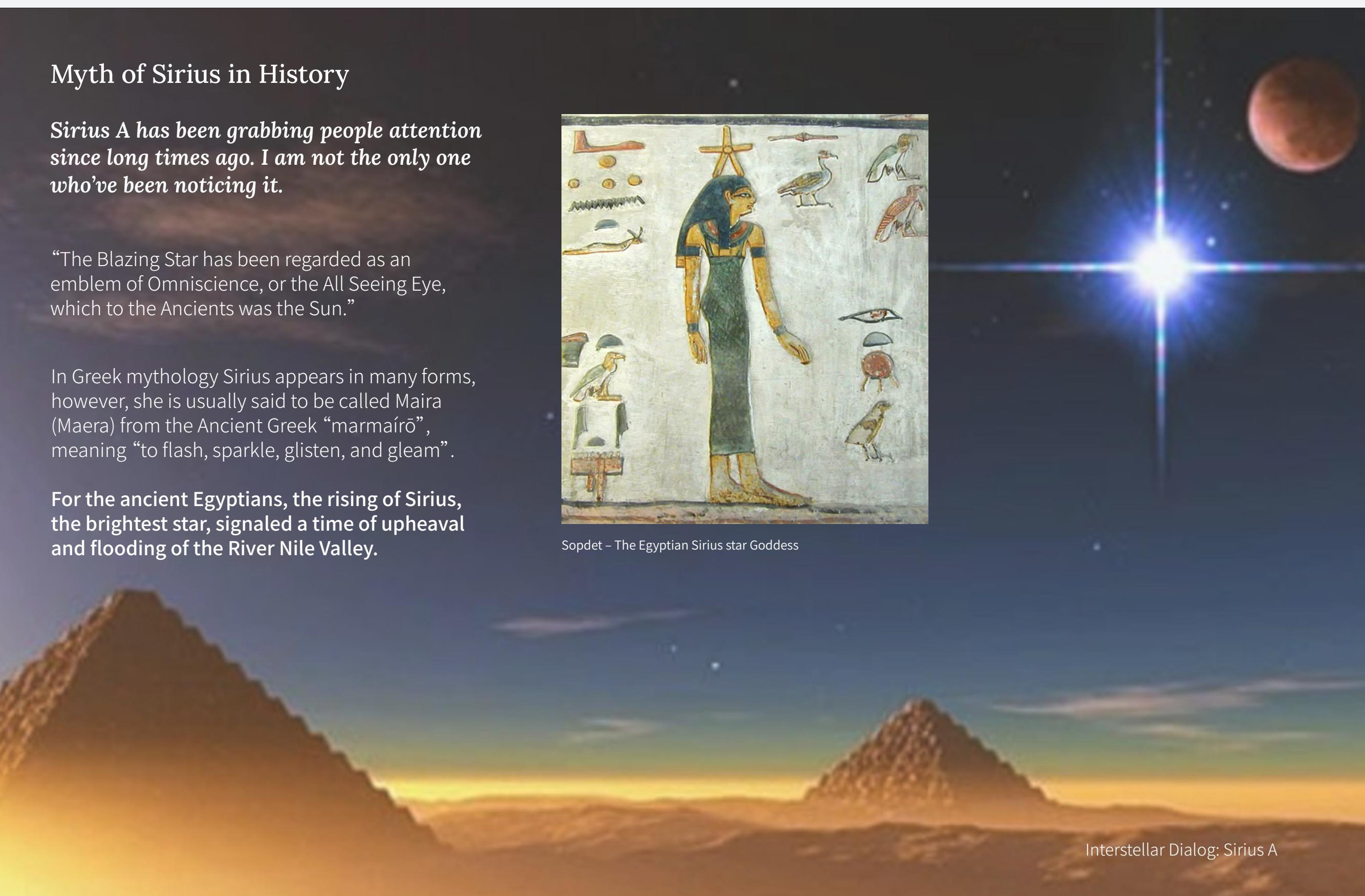


Sirius A



The Transiting Exoplanet Survey Satellite (TESS) launched to study the exoplanets of bright stars
Credit: Nasa

Sirius, also called **Alpha Canis Majoris** or the **Dog Star**, brightest star in the night sky, with apparent visual magnitude -1.46.



Myth of Sirius in History

Sirius A has been grabbing people attention since long times ago. I am not the only one who've been noticing it.

"The Blazing Star has been regarded as an emblem of Omniscience, or the All Seeing Eye, which to the Ancients was the Sun."

In Greek mythology Sirius appears in many forms, however, she is usually said to be called Maira (Maera) from the Ancient Greek "marmáriō", meaning "to flash, sparkle, glisten, and gleam".



Sopdet - The Egyptian Sirius star Goddess

RESEARCH: Why Music

Vibration/Sound/Music is decided as my agency to send out messages as the response to possible lives on Sirius A.

1. Sound can travel cosmically based on the hypothetical String Theory

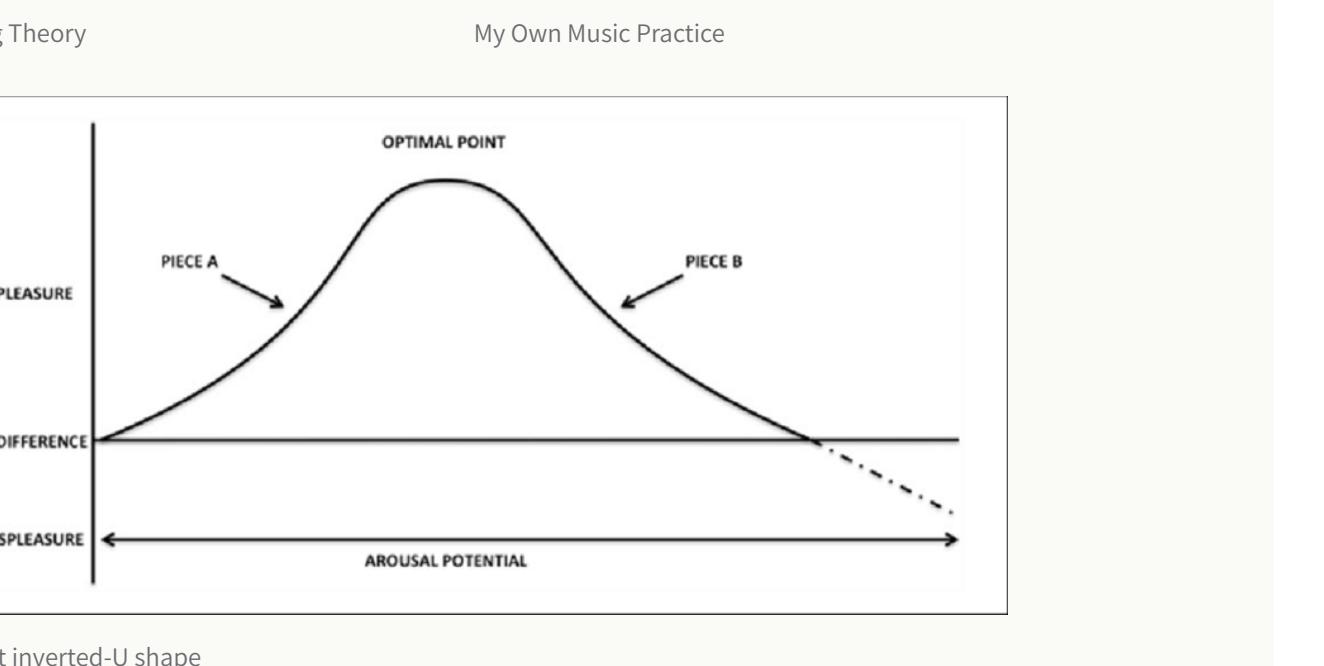
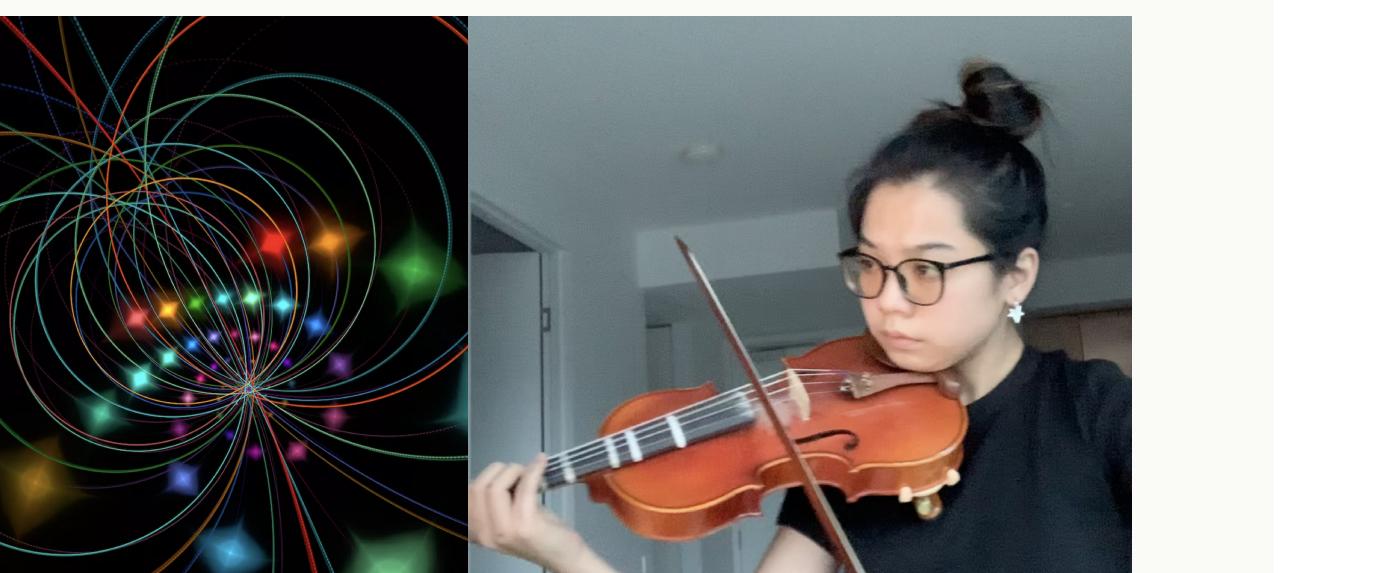
2. Music is a known engaging media to empower human beings, and so, possibly other unknown lives.

Music Pleasure

The experience of intensely pleasurable music can cause **dopamine release in the mesolimbic reward system** (Salimpoor et al, 2015).

Music Surprise

Wundt inverted-U shape explains the Music Surprise. Tension stimulated by expectation, and its denial or fulfillment are in large part responsible for **emotional arousal** and pleasure in music.



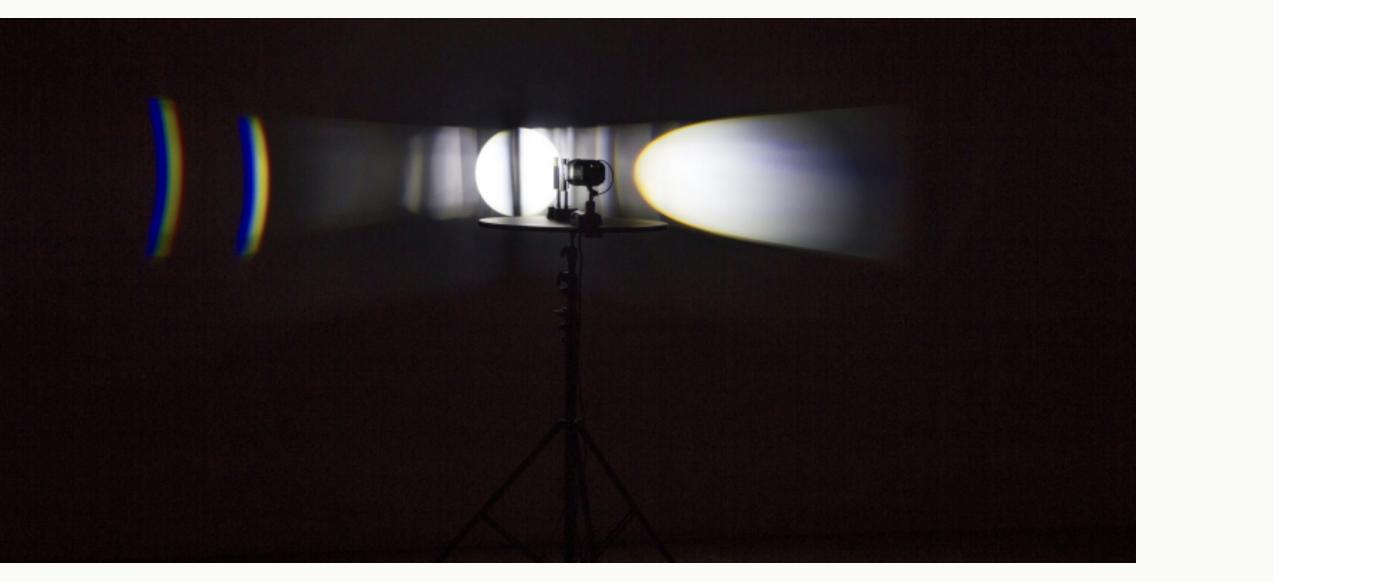
RESEARCH: Inspiring Events & Works (Selected)

Inspiring Events 01:
The Golden Record: NASA



Nasa Golden Record, 1977

Inspiring Artists:
Michaele Gleave



Eclipse Machine, Michaele Gleave

CONCEPTUALISATION: What to do

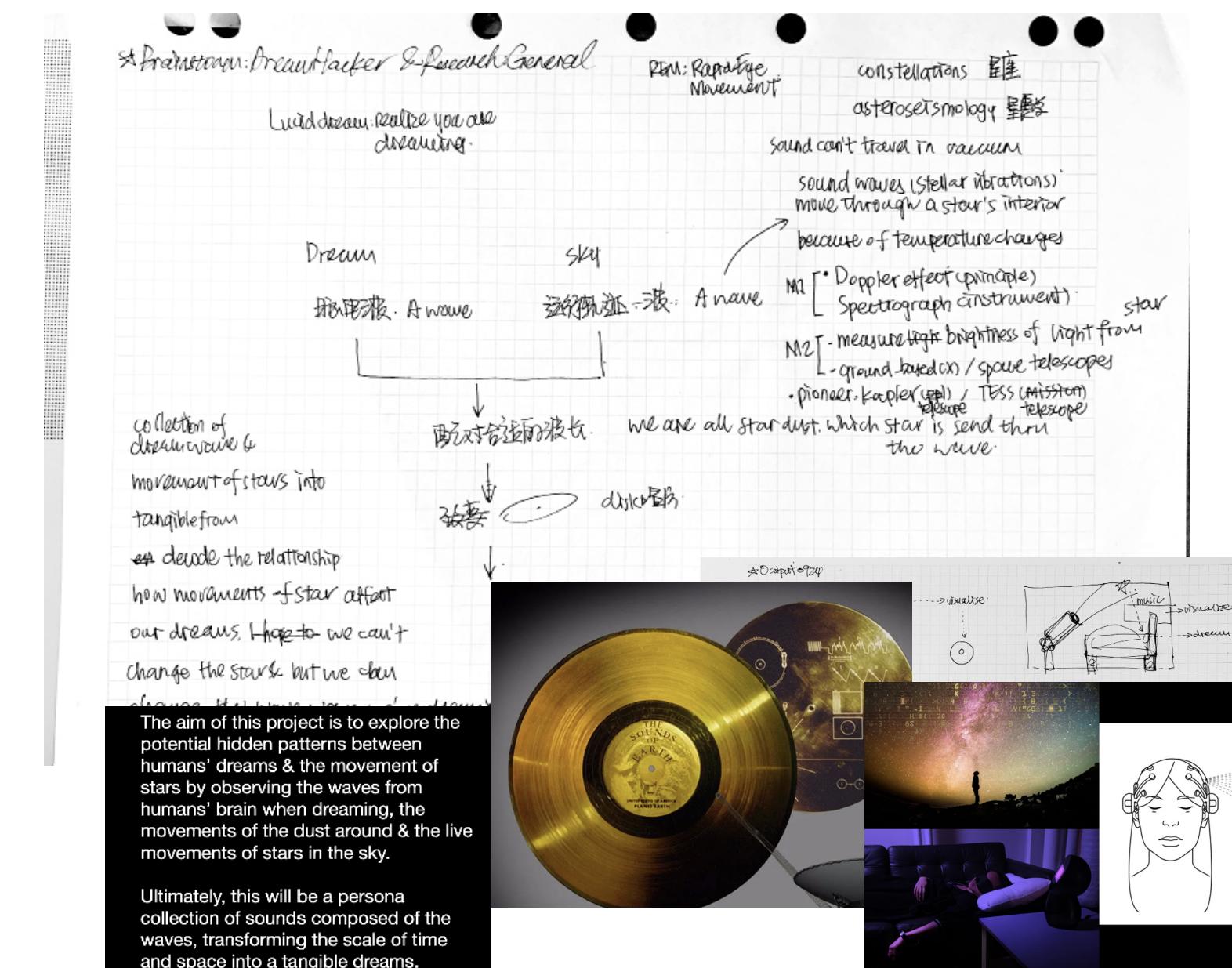
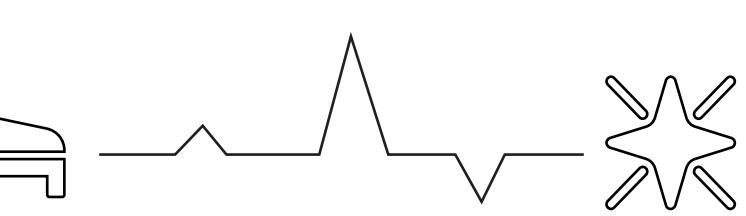
- An interactive designed experience to empower lives living under the same Sirius A
- A response for messages appear in our unconscious dreams which might be the messages sent by potential lives on Sirius A through its magnitude
- A tribute to all our mysterious dreams and fantasy upon the brightest star in the night sky
- A trumpet of the strings vibrating in the whole universe

Expected Output

- Vinyl sent to Sirius A, collecting soundtracks
 1. theta waves (brainwaves of unconscious moments) when people dreaming at night
 2. Sirius A magnitude
 3. dreams collection of people from diverse cultural background
- Interactive Website: playing sound track and presenting concept to audiences
- Conceptual Video: empower and engage audiences with this speculative concept

Expected Agency (Machines)

- Brain Computer Interface
- Digital Camera
- Virtual Telescope
- Vinyl (correspond with The Golden Record)



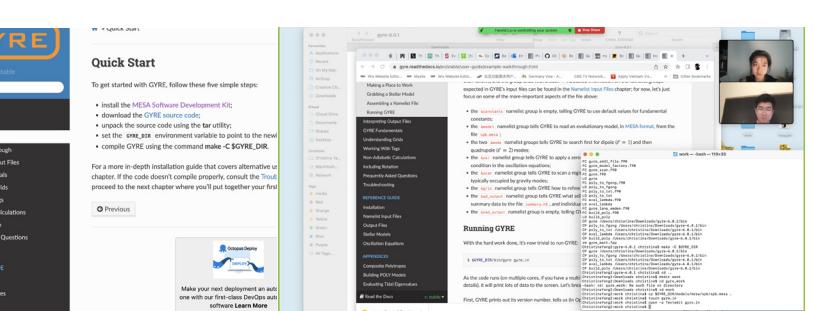
EXPERIMENT: Sirius A Magnitude Extraction (Process)

Experiment 01: GYRE+MESA

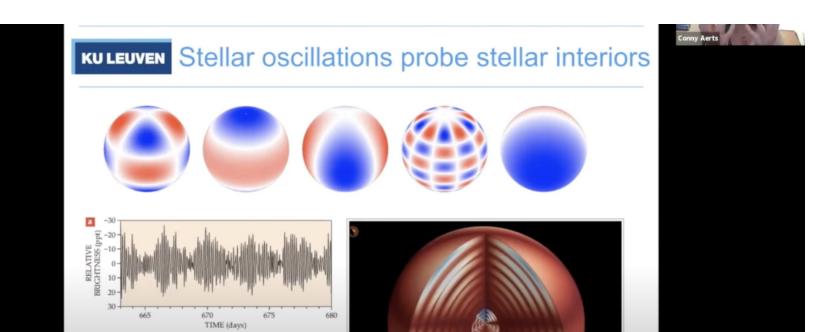
After researching different open source programs over internet, I found MESA (Modules for Experiments in Stellar Astrophysics) and GYRE.

Why failed?

1. Coding was able to run successfully while ending up with a huge amount of confusing data
2. As an astronomical amateur, it was very difficult to understand the meaning behind those data. Failed to find the ones I was looking for.



Study Source & Notes



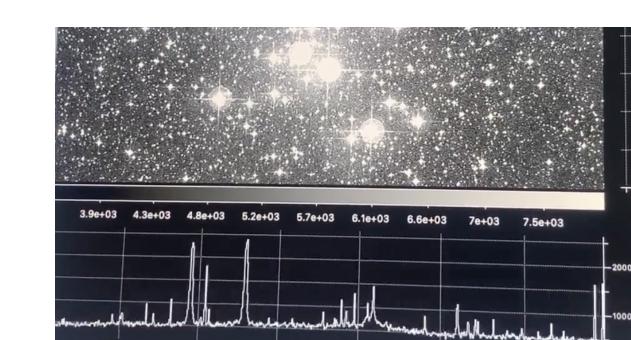
Space asteroseismology: the Renaissance of stellar interiors

Experiment 02: SAODS9 + IRAF

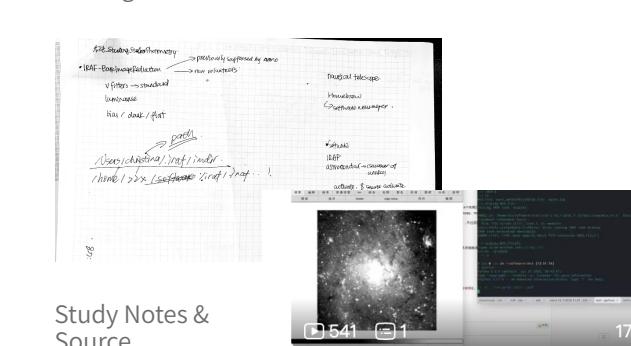
SAOImageDS9 is an astronomical imaging and data visualization application. It provides for **easy communication with external analysis tasks**.

IRAF is used at the Center for Astrophysics.

The Smithsonian Astrophysical Observatory Telescope Data Center creates and maintains software to process and archive data from optical telescopes at the Whipple Observatory and MMT Observatory on Mt. Hopkins in Arizona. The software is freely distributed and documented online.



Testing: M44



Study Notes & Source

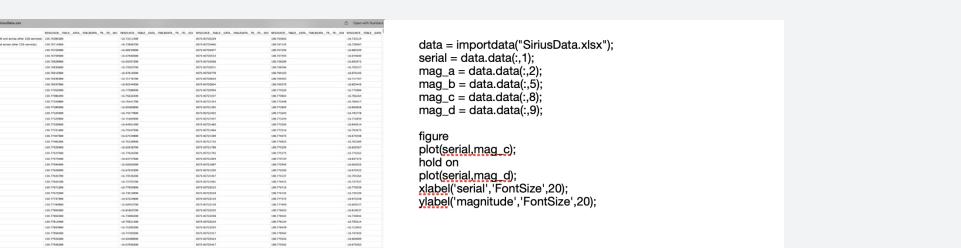
iraf的编译和安装

Interstellar Dialog: Sirius A

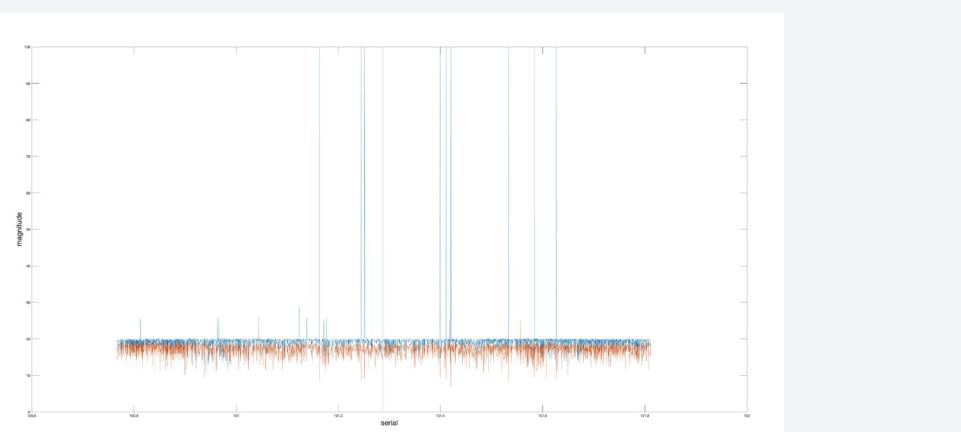
EXPERIMENT: Sirius A Magnitude Data Extraction

Data of photometry of Sirius A can be extracted from SAO which is a library collecting data from TESS system.

With helps from my data scientist friend (RobertLu), I tried to extract the magnitude data.



Sirius photometry data, from SAODS9

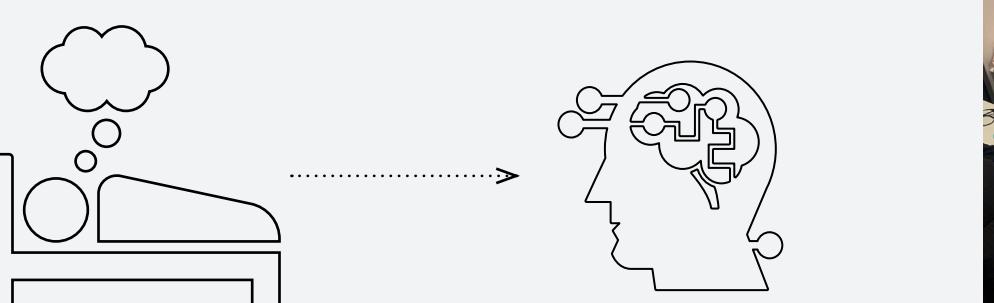


Sirius Magnitude Graph: drew based on data above

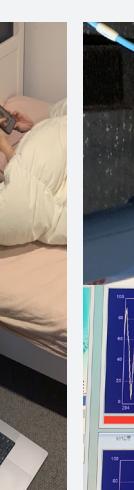
EXPERIMENT: The Sound of Dreams

I tried my best to gain access to BCI. Eventually, I purchased TGAM BCI from Neurosky.

Although the device is not ideal for EEG, this is my first step to experiment with BCI and brain waves. I at least feel proud of the spirit of dancing without disciplines.



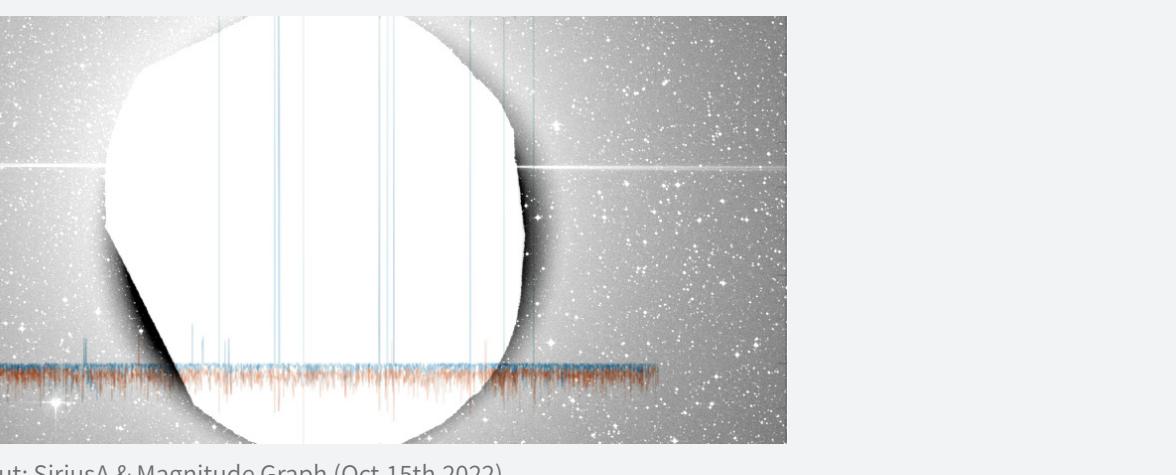
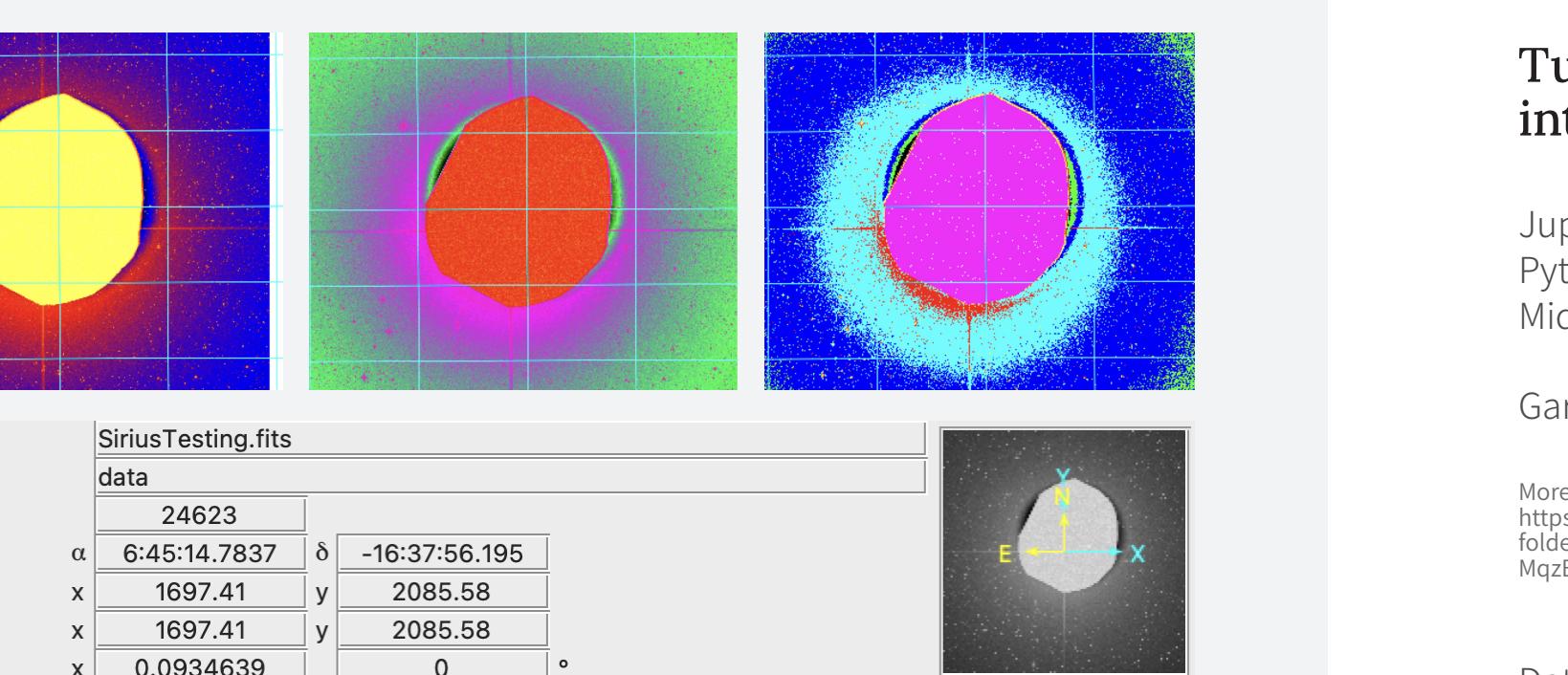
Testing



Sample data

Eventually, I obtained Qi's theta waves of her dreams on 2022/10/15.

The csv data can be automatically saved by Mind XP which only requires a few simple code.



SAODS9 Output: SiriusA & Magnitude Graph (Oct.15th.2022)

EXPERIMENT: Data Sonification

Turn magnitude into music

Jupyter Notebook
Python3.10
Midi Library:Midiutil

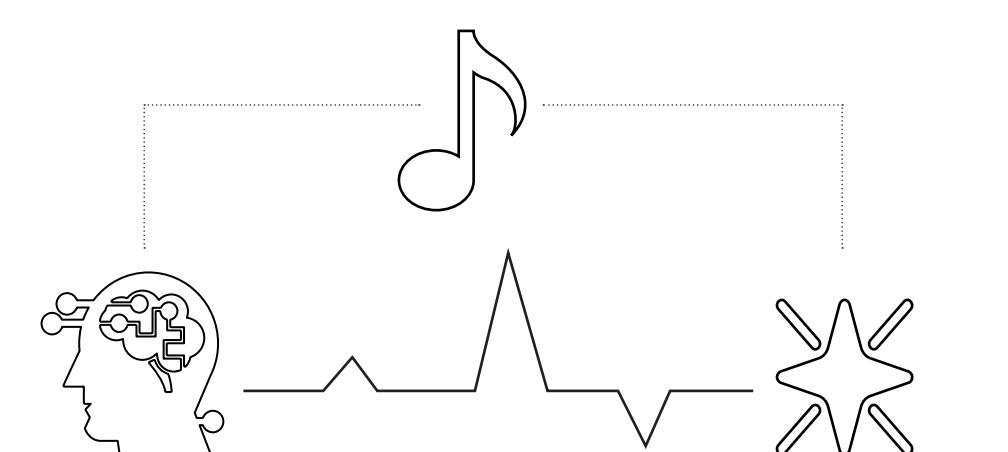
GarageBand

More Testing soundtracks:
https://drive.google.com/drive/folders/1QT8s5nui6s72aV9ktm-MqzB_gA4QH8wU?usp=sharing

CSV

Midi

Audio



Data filtering

```
[1]: df = df[(df['Value'] >= 200000)] #filter data if you like (for example, only craters)
x = df['Time'].values #this is a numpy array (not a list), you can do mathematical
x = pd.to_datetime(x)
y = df['Value'].values
y = y.astype(int)

plt.scatter(x, y, s=y)
plt.xlabel('x')
plt.ylabel('y')
plt.show()

times_myrs = max(x) - x #measure time

plt.scatter(times_myrs, y, s=y/100000)
plt.xlabel('time since impact 11:00:00')
plt.ylabel('Theta')
plt.show()
```

```
[1]: def map_value(value,min_value,max_value,min_result,max_result): #mapping principle
    '''maps value (or array of values) from one range to another'''
    result = min_result + (value - min_value)/(max_value-min_value)*(max_result - min_result)
    return result

map_value(1,200000,900000,100,300)
```

```
[198]: 42.85742857142857
```

```
[1]: myrs_per_beat = 100 #number of Myrs for each beat of music
times_myrs = times_myrs.total_seconds()
t_data = times_myrs/myrs_per_beat

duration_beats = max(t_data) #duration in beats
print("Duration:", duration_beats, "beats")

Duration: 222.08 beats
```

```
[1]: #calculate duration in seconds
bpm = 60 #if bpm = 60, 1 beat = 1 sec

duration_sec = int(duration_beats*100)/bpm #duration in seconds (actually, onset of print("Duration:", duration_sec, "seconds"))

plt.scatter(t_data, midi_data, s=10*y_data)
plt.xlabel('beats')
plt.ylabel('Theta')
plt.show()
```

```
[1]: y_data = map_value(y, min(y), max(y), 0, 1)*0.5 #normalize data, so it runs from 0 to 1
plt.scatter(times_myrs, y, s=50*y_data)
plt.xlabel('time since impact 11:00:00')
plt.ylabel('Theta')
plt.show()
```

```
[1]: y_data = map_value(y, min(y), max(y), 0, 1)*0.5 #normalize data, so it runs from 0 to 1
plt.scatter(t_data, midi_data, s=10*y_data)
plt.xlabel('beats')
plt.ylabel('Theta')
plt.show()
```

```
[1]: pip install midiutil
from midiutil import MIDIFile #import library to make midi file
```

```
#create midi file object, add tempo
my_midi_file = MIDIFile(1) #one track
my_midi_file.addTempo(track=0, time=0, tempo=bpm)
n_midi = len(midi_data)
t_data = t_data.astype(int)
```

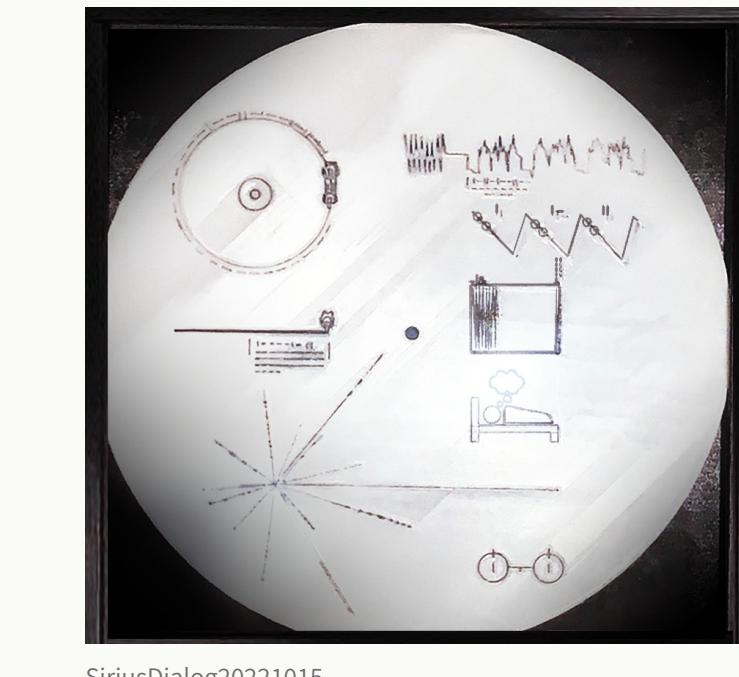
```
#add midi notes
for i in range(2040):
    my_midi_file.addNote(track=0, channel=0, pitch=midi_data[i], time=t_data[i], duration=0.1, volume=100)
```

```
#create and save the midi file itself
with open(filename + ".mid", "wb") as f:
    my_midi_file.writeFile(f)
```

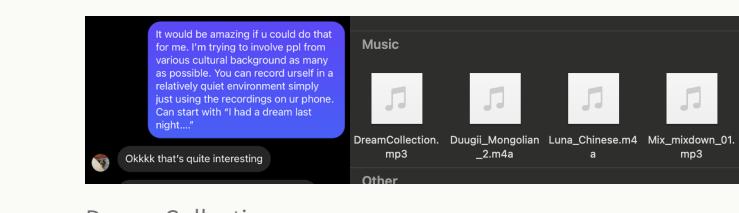
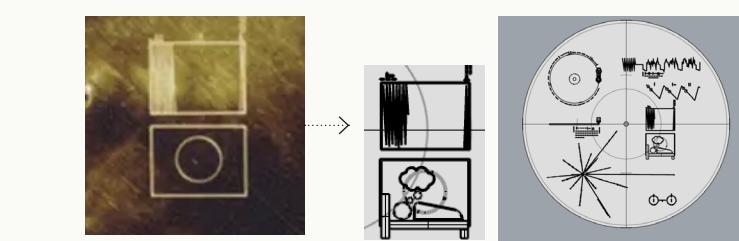
DESIGN: SiriusDialog20221015

Collecting people's dreams from different cultural backgrounds as many as I could on the same night when I collected Sirius A magnitude and theta waves of dreams (2022.Oct.15th).

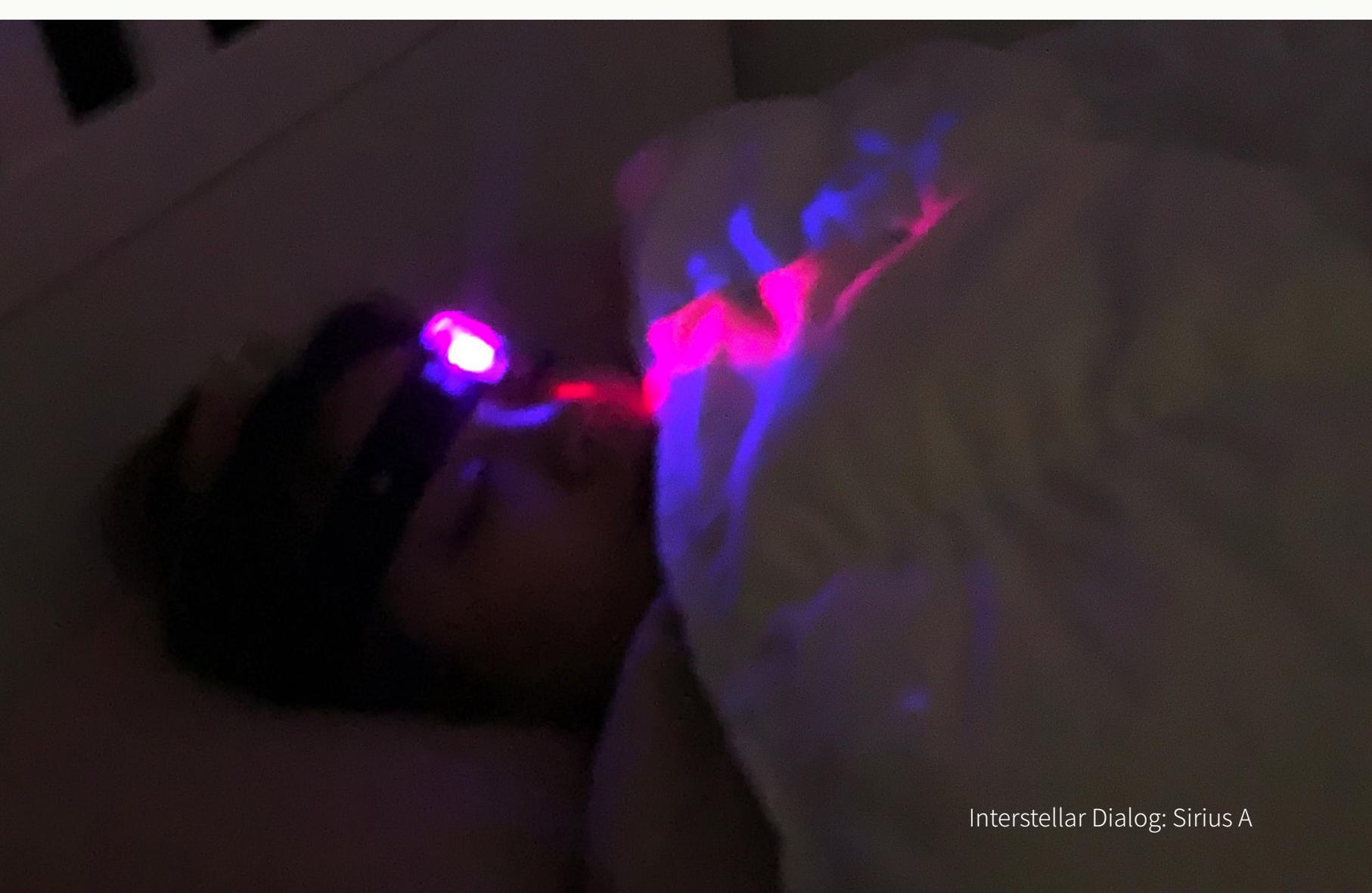
For the vinyl which was tended to send to Sirius A as a response, I kept the original icons which indicate the correct way to play the vinyl.



SiriusDialog20221015



Dream Collection



Interstellar Dialog: Sirius A

DESIGN: Website & Filming

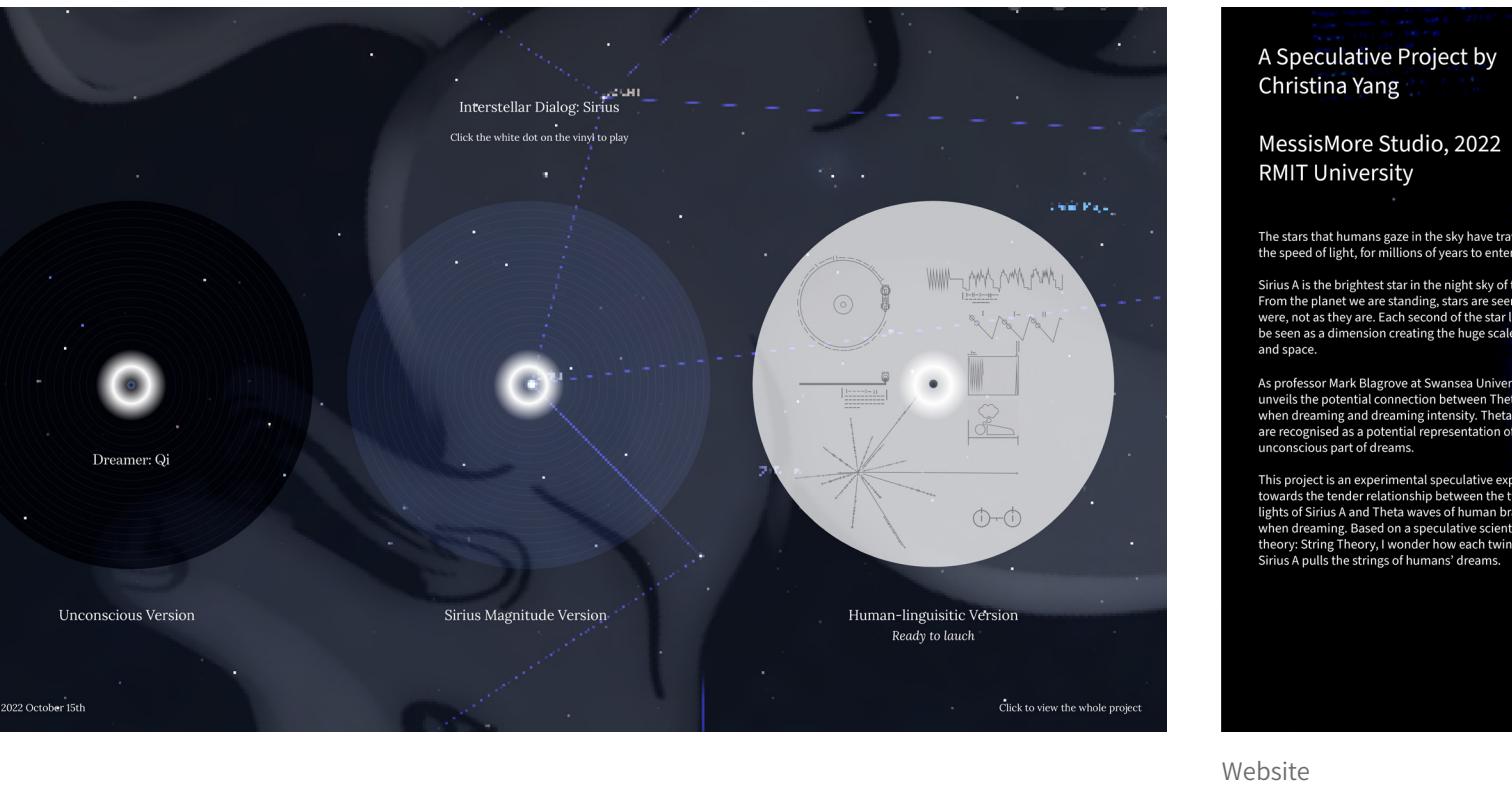
Interactive Website

For a more immersive experience to feel the resonance between:

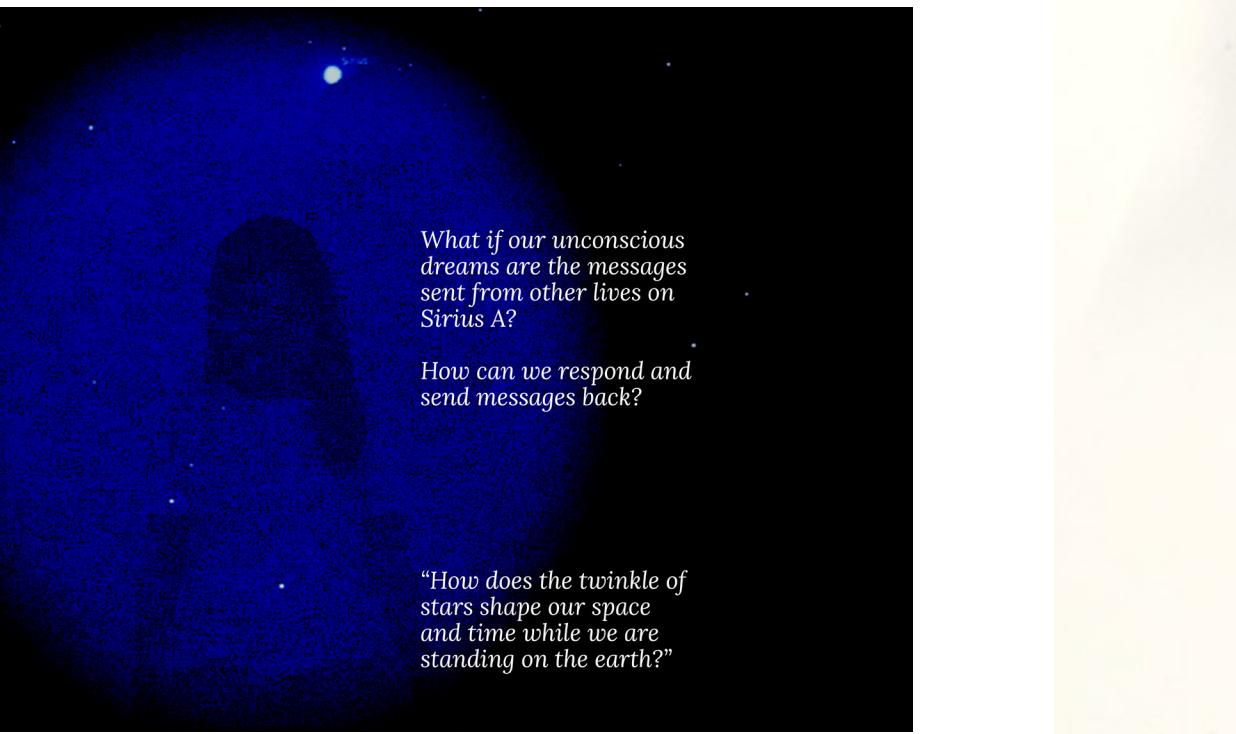
Sirius A Magnitude - dreams from the earth

This website is created as an output to support the concept.

Web:
<https://christywn.github.io/Christywn.github.io/2.html>



Website



Website

Conceptual film

Video is a powerful tool to express an conceptual idea telling the whole story.

I invited Qi (the dreamer) to participate to participate in the filming for a more comprehensive presentation.

To make the video visually fruitful, visuals from 'Stellarium' a open source virtual telescope is used.

Inspired by the concept of string, spectrum, particle, I used TouchDesign to generate interactive visuals.

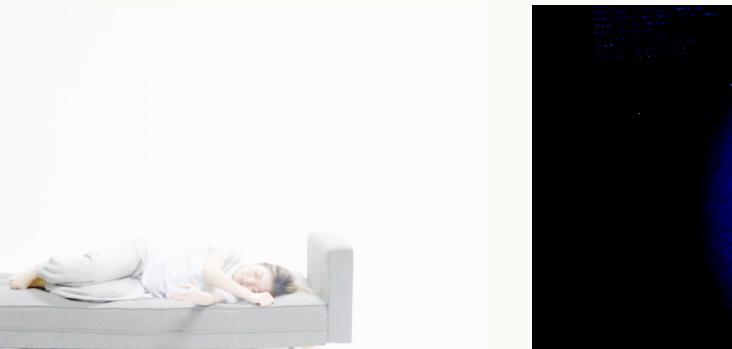
Video:
<https://vimeo.com/762456467>



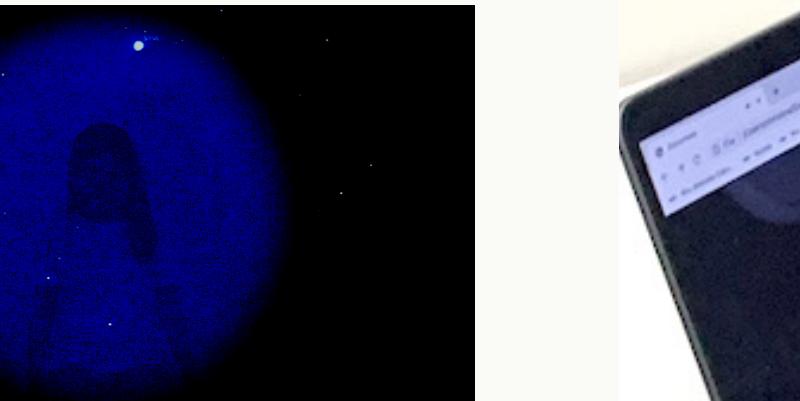
Me tracing Sirius



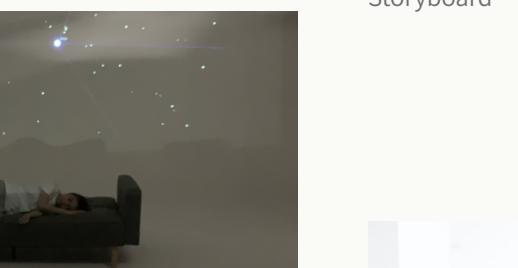
Storyboard



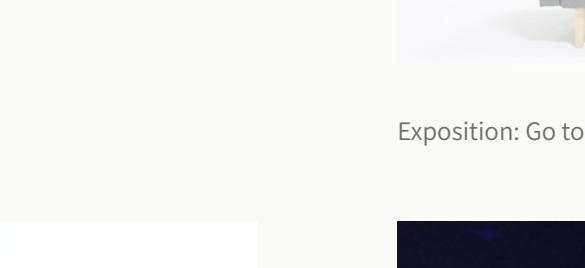
Exposition: Go to bed (real life)



Elaboration: Into Sirius dimension



Shooting



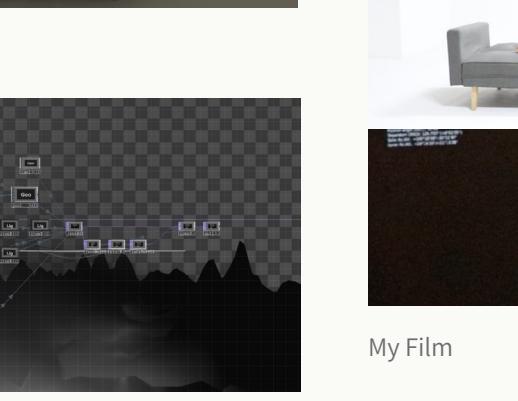
My Film



Climax: Dialog with Sirius



Dénouement: Wake up (real life)



TouchDesigner Workdesk



Interstellar Dialog: Sirius A