



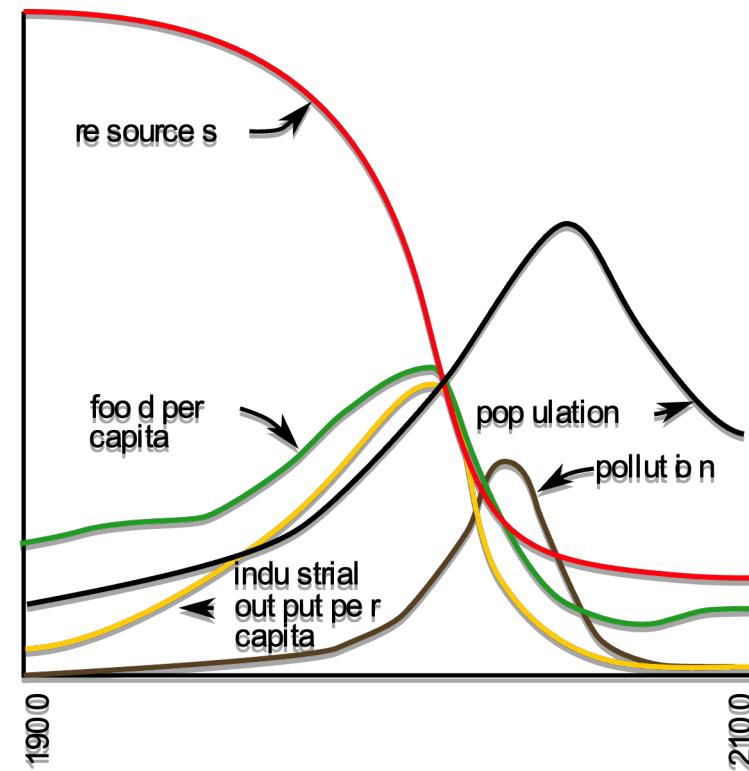
Future Worlds

Creative Programming and Computing – Project presentation

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Context

- **Inpiration**
 - World3 Model from Limits to Growth
- **Motivation**
 - Promote awareness of our control of our planet's future
- **Concept**
 - Bring data to life through audio visual creative computing techniques



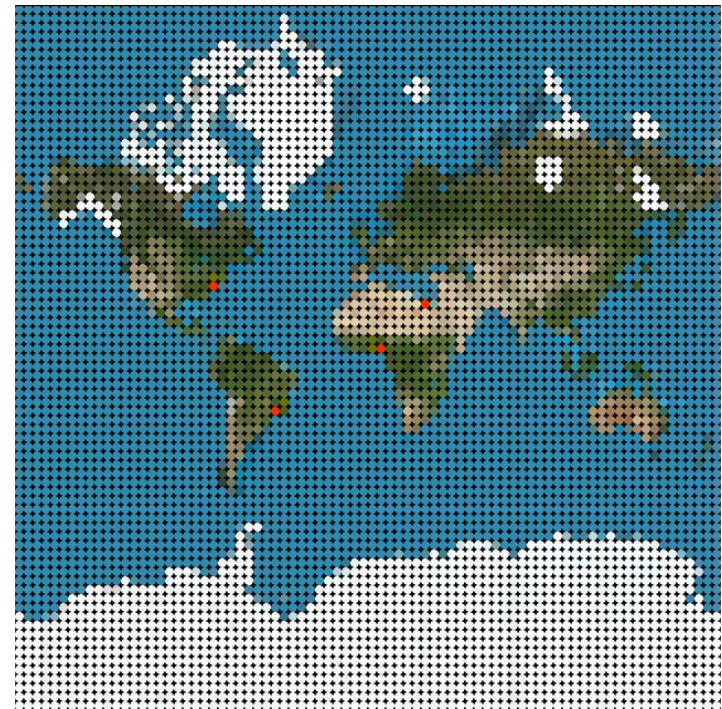
Hackathon

- 2D representation
- OpenCV Edge detection

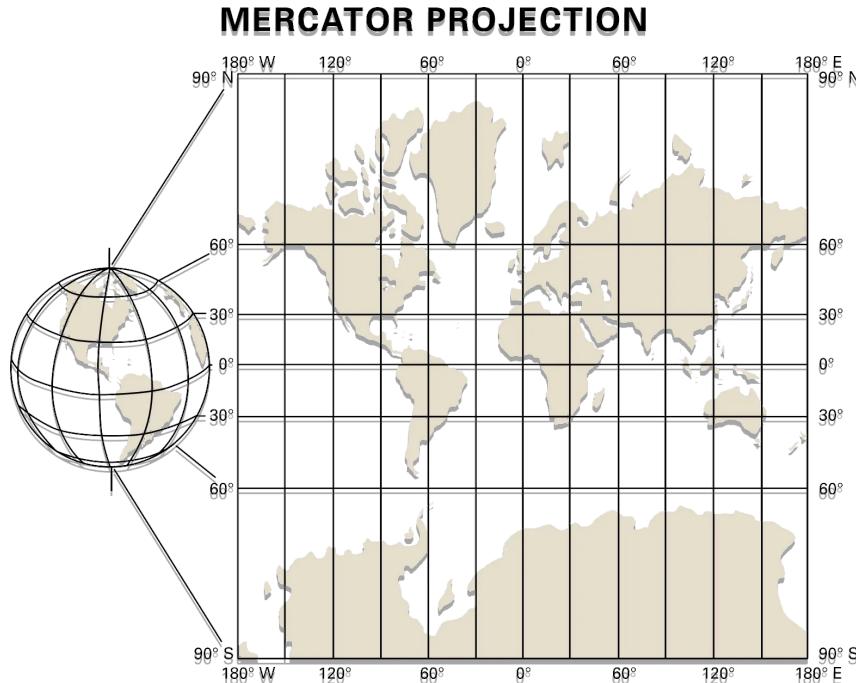


Technical Details: Image Input

- Mercator Map to 2D Grid of Cells
- Cell Type classified through HSB colour categorisation



Technical Details: Two Dimensions to Three Dimensions



- 2D map projected onto a sphere:
 1. (X,Y) of image to (Longitude, Latitude)
 2. (Longitude, Latitude) to Sphere
 3. Cell size scaled by Longitude
- Axis rotation through camera movement



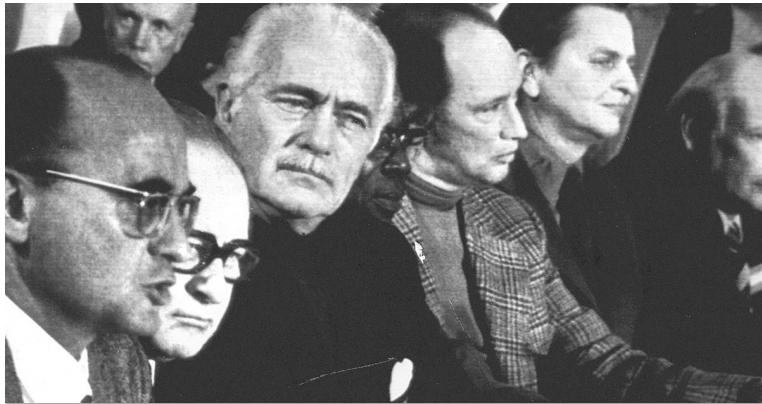
Technical Details: Automa Cellulare

- Inspired by Conway's Game of Life
- 5 cell states to the power of 6400 cells
- 9 cell interaction rules
- Rate of change proportional to time series data

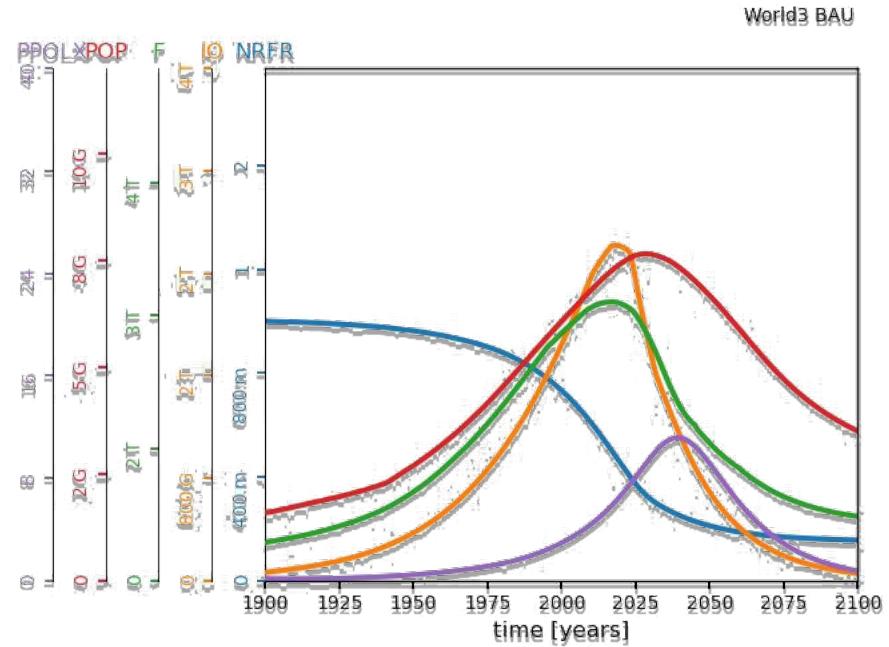


Technical Details: World3 Model

- System dynamics model for the simulation of the world's most important variables and their interaction in the ecosystems of the Earth



- Source of time series data

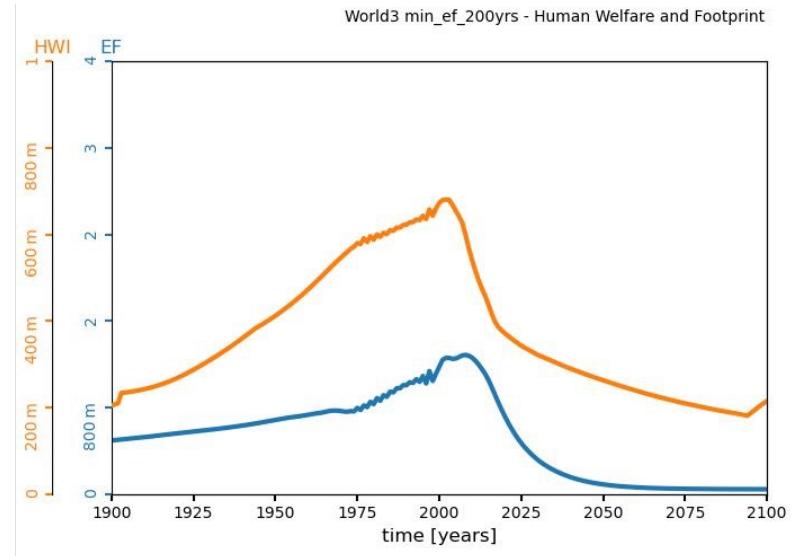


- Most convenient scenarios found through the use of a **Genetic Algorithm**

Technical Details: World3 Model

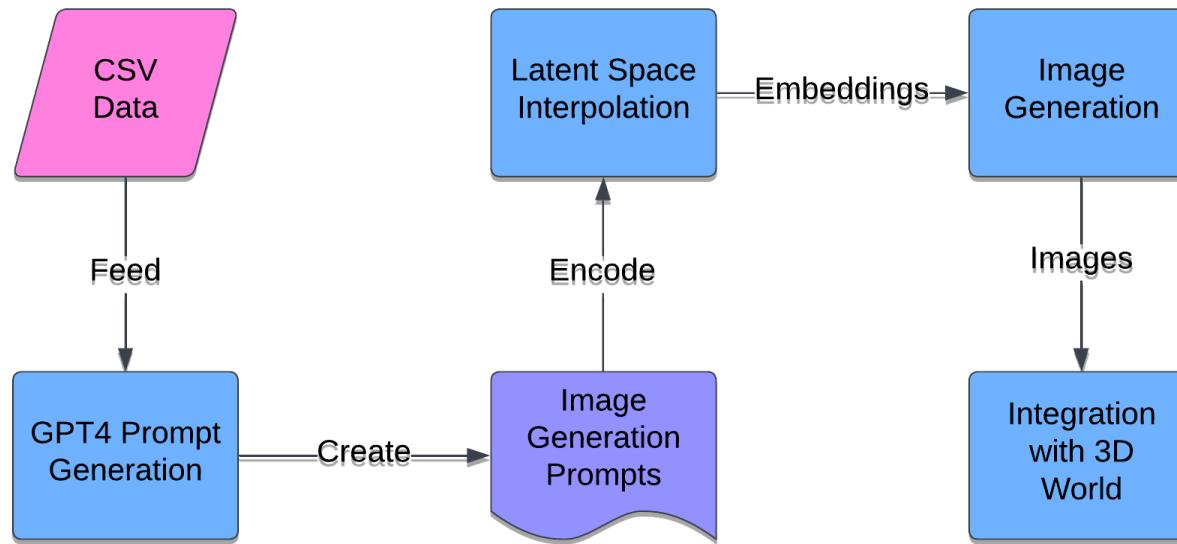
Examples of variables in use:

- **PPL:** Population
- **F,FPC:** Food [vegetable-equivalent kilograms/year], Food per capita
- **LE:** Life expectancy
- **HWI:** Human welfare index
- **EF:** Human Ecological footprint



Technical Details: A.I. Image generation

GPT4 + CLIP + small-stable-diffusion-v0



Technical Details: Sound Design

- Time series data packaged as OSC Messages
- Controlling music and foley sounds in Ableton



Final Technical Solution

