Teaching Sustainable Creative Technologies

Three methods for more carbon aware creative production.

Chelsea Thompto
School of Visual Art
Virginia Tech
Blacksburg, VA, USA
cthompto@vt.edu

ABSTRACT

Artists and especially new media artists contribute to public perceptions and adoption of new technologies through their own use of emerging media technologies such as augmented and virtual reality, generative image systems, and high-resolution displays in the production of their work. In this way, art and media production can be understood as part of the larger issue of unsustainable computational consumption. As such, it is critical for artists to develop, share, and promote new and more sustainable methods of engaging with technology, especially within the context of higher education. This paper will explore how we might teach artists to implement more sustainable methods by considering the relationship between the technical approaches of compute reuse, sustainable web development, and frugal computing, and the concepts of material specificity [1], futurity, and media archaeology[2]. Proposing three methods of less carbon-intensive artistic production, this paper will outline not only the technical viability of these approaches but also the rich conceptual opportunities these approaches might offer to artists and viewers alike. For each method, models for pedagogical implementation will be explored.

Method one, compute reuse as media archaeology, will explore how reusing obsolete or outmoded hardware (e-waste) can simultaneously extend the life of compute equipment while also enabling artists to gesture to the social context for which the equipment was initially made. This approach can be seen in the work of PAMAL-Art and their work *Profound Telematic Time (P.T.T.)* [1], 2022 which makes use of and explores the culture and history surrounding the Minitel [3] network. Classroom engagement with this method might include a site visit to a local e-waste facility and/or a project wherein students must develop a new work on old hardware.

Figure 1: Installation view of *Profound Telematic Time (P.T.T.)*

[1] In art, material specificity refers to the idea that all materials have inherited and culturally situated meanings that artists can use and manipulate in the production of their work.
[2] Media archaeology is the study of media history through lesser-known devices and processes.
[3] The Minitel network was an online service in the 1980s which predated the modern internet.

Method two, sustainable web development [4] and material specificity, will explore how designing websites with a low carbon mindset on the backend can be brought to frontend development in the form of low resolution/dithered images, limited color palettes/animations, etc. to highlight these choices to end users/viewers. The work *Solar Protocol* [2] by Tega Brain, Alex Nathanson, and Benedetta Piantella exemplifies this holistic approach to sustainable backend and frontend creative production. In the classroom, this could take the form of facilitating hands-on experience with network hardware and challenging students to work within visual and technical limits in the production of a new website.

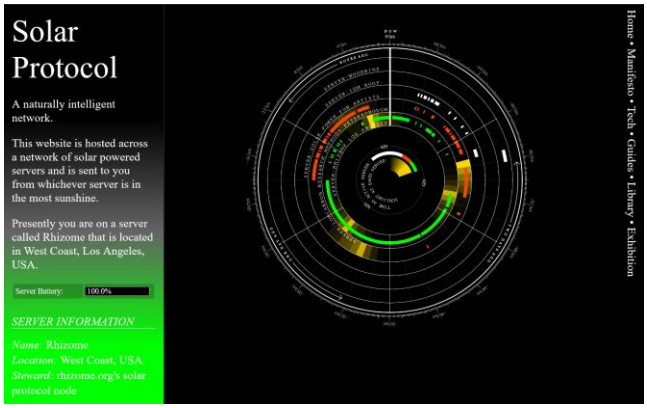

Figure 2: A screenshot of the *Solar Protocol* website featuring server battery and location information.

Method three, frugal computing in artist conceptions of the future, will explore how artists can develop work in ways that challenge the "always on" approach in contemporary gallery/museum display settings and instead imagine projects whose production and display are tied to available resources. The work of Energy Transition Design to produce solar power systems for art and design contexts offers ways to imagine artworks that respond to the availability of renewable energy. The classroom implementation of this could involve students redesigning an existing exhibition space to be responsive to energy availability and then designing future projects for the redesigned space.

[4] Web development here refers to both frontend and backend development and is reflective of the need for artists and designers to engage with both sides in the development of truly ecologically conscious work.

Figure 3: A solar cart designed by Energy Transition Design.

Taken together, these methods begin to outline new modes of artistic production that are responsive to our shared climate crisis as opposed to complacent in driving digital consumption. It is critical that such methods be enfolded into new media art education across a broad spectrum of technical processes including but not limited to installation art, video and animation production, web development, and interactive media/games. Further, these methods not only offer low carbon alternatives to traditional media art production, but they also offer new ways of thinking about technology which will be of critical importance for future generations of creative practitioners.

CCS CONCEPTS

Applied computing - Arts and humanities - Fine arts, Applied computing - Arts and humanities - Media arts, Hardware - Power and energy - Impact on the environment, Social and professional topics - Professional topics - Computing industry – Sustainability

KEYWORDS

Materiality, new media art, design, media archaeology, e-waste, sustainable web development, frugal computing.

REFERENCES

[1] Preservation & Art - Media Archaeology Lab, 2022. Profound Telematic Time (P.T.T.), https://pamal.org/profound-telematic-time/ .
[2] Tega Brain, Alex Nathanson, and Benedetta Piantella. 2022 -. Solar Protocol. https://solarprotocol.net/index.html
[3] Energy Transition Design. 2024. https://energytransitiondesign.com/