

PHYSICAL COMPUTATION

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The world which surrounds us is not arbitrary. Its composition and intensities are indices of the countless interactions which have accumulated to form the present. Every step leaves a track, every journey forms a trail, punctuated by the patterns of light and shadow we use to tell the time.

To be alive is to make sense of one's world. Where are we? When are we?

From measuring fluctuations in the ozone to navigating via constellations, we continuously ask the living world which surrounds us, to broaden our limited sensory faculties, and make whole our partial and fragmentary perspective(s). This process of locating ourselves within a bigger world, is as much a matter of revelation and awe as it is a matter of survival. It is an innate part of being a human. Over the long arc of human social life, we've codified these diverse rituals and practices into a more durable form through our technical systems, many of which have been lost through centuries of systemic cultural erasure. Physical computation occurs in many forms, and constitutes many types of "technologies" which long preceded its dominant conception today. As such, it is an invitation to critically examine the legacies and ideologies used to define what computation is. How are contemporary systems for computing the physical world, prefigured by long-standing practices of human-environmental correspondence, which themselves can be understood as a form of computation?

Rather than falling into a familiar trope that the origin of technology is predicated on domination and capture, this course seeks to relearn a conception of technology, and by extension computing, as modalities of human - environmental interdependence. To do this, we'll examine physical computing, and cyber physical systems more broadly, as means through which we probe the boundary conditions between our bodies and the planet. How do we sense through the planet and how does the planet 'see' itself through the vast sensory infrastructures humans have conceived and made?

The notion of physical computing is an opportunity to get back to the basics, and ask ourselves how to design tools and practices which might blur that boundary further... in a process I refer to as ecotechnics. Across readings, systems analysis, participatory workshops and technical labs we will explore how computing is a proxy to human - environmental interaction, and explore the diverse ways that this manifests over time and space.

Our goal is to map out a critical design space where creative practices can weave contemporary and ancient patterns of environmental interaction, to engage the poly-crisis which defines our era. How might we create space for a definition of technology and computing to emerge which is not based on power accumulation or weaponization, but on intimacy and mutual constitution between organisms and their environment?

Who Should Take this Class

- Anyone interested in developing both a theoretical and technical grasp of computing systems in relation to the environment / physical world
- Anyone seeking a pluralist conception of computation beyond a singularizing Cartesian logic
- People interested in sensors, the Internet of Things, environmental monitoring systems, and decentralized technologies of governance, sensing, and ownership
- Anyone curious to understand the hardware and software systems of embedded computation
- Anyone interested in learning more about technology through an anthropological perspective on human-environmental interaction
- *Anyone interested in taking their notion of computing on hike*