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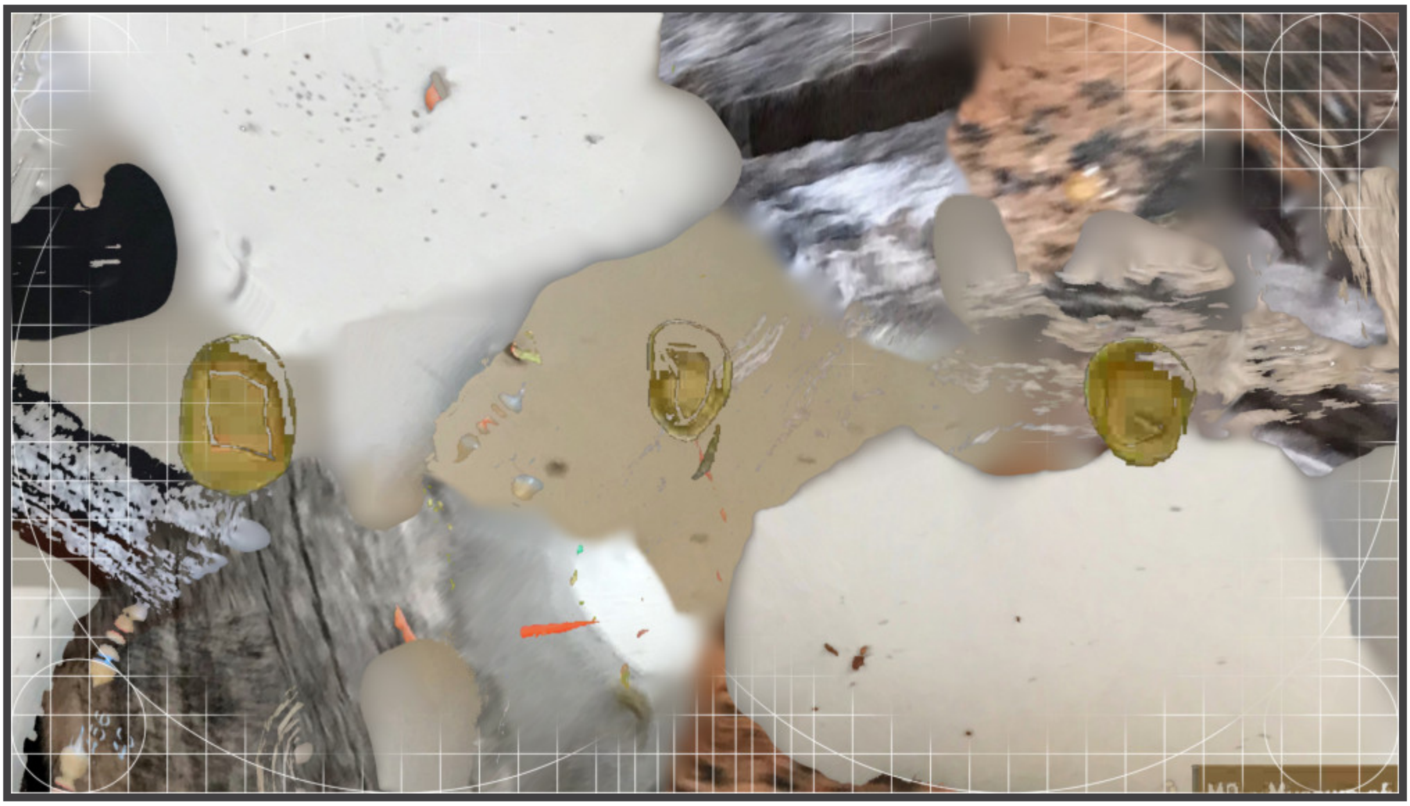
Hardware-Flesh-Software-Flesh

Mona Hedayati

Mona Hedayati’s experimental visual essay combines strands of technical critique, poetic reflection, and embodied experience to challenge how biometric data is captured, integrated, and interpreted. Drawing on her ongoing artistic research with biosensor wearables—devices that record physiological data such as pulse rate, skin perspiration, and temperature—the artist resists the reductive narratives of «affective computing»: a field that seeks to translate bodily signals into legible emotional states like fear, joy, or sadness.Rather than using data to identify or decode emotions, Mona Hedayati unsettles the presumed objectivity and universality embedded in technical systems, yet follows the technical steps of capturing bodily data to a certain extent. She uses the processed data to generate an acoustic environment as a way of subverting the technical logic while also creating a possibility to feel these signals as sonic intensities. Responding to the physiological signals as entangled and messy acoustic accounts, the artist combines digital images with experimental writing to reveal where this transformation fails from the complexity of bodily processes informed by lived experience to universal emotions. Underscoring the contradiction between these two perceptions, her essay juxtaposes technical descriptions of biometric data processing with autobiographical accounts of her experience as a migrant. In contrast to fixed categories of universalised emotions, the fragmented vignettes allow for a multiplicity of affective states to surface, showcasing how the artist’s body responded to displacement in strange ways long before she could cognitively process these sensations as emotions. Concentrating on the gap between what is rendered technically legible and what is felt but illegible, Mona Hedayati’s essay mobilises Hortense Spillers’ concept of the «flesh.» Spillers discusses the flesh as a construct that is distinct from the socio-cultural constitution of the body, particularly in the juxtaposition of white body against Black flesh subjected to racialised violence, as flesh bears the marks and gives evidence of what it has gone through. Flesh, in this sense, refers to a pre-subjective, pre-coded body that registers the world not through cognition but through sensation. In Mona Hedayati’s textual fragments, flesh operates as a conceptual device that underscores the embodied residue of political and personal histories. As a state prior to a socially and ideologically legible body, flesh resists the reduction into fixed categories and stereotypes. In mobilizing the concept in relation to the main character of the essay, it shifts the protagonist’s pronoun from «she» to «it»—«she» referring to a gendered culturally-stable, politically-positioned subject who is intelligible within social frames; «it» marks a return to the biological sensorium as a reactive system driven by what it has somatically registered, long before those sensations are rendered intelligible or sayable.The fragmentary vignettes are hence rupture points, sites where the flesh interrupts the technical workflow. The flesh does not fit in the logic of computation. It glitches the system to reclaim the right to remain undetectable, a refusal to be parsed emotionally.



She draws the blanket up, tucks herself in. A deep breath, then another. The room softens. Flesh is settled under the blanket. It exhales through the nose, the deep breath warm against woven fibres. It pulls knees to chest, skin brushing skin. The world has loosened, edges dissolved, muscles unclenched.

The Hardware

The pipeline relies on biosensor data typically fit to measure neurophysiological arousal, collected using Empatica E4 wearable device equipped with 4 sensors: galvanic skin response (GSR), detecting micro-perspiration on the surface of the skin; blood volume pulse (BVP), detecting the amount of blood pumped into peripheral tissues at any given time using a combination of infrared and green light which can then be processed to derive key metrics from, such as heart rate variability and arrhythmia; 3-axis accelerometer detecting acceleration of motion and orientation in 3-dimensional space; and optical thermometer detecting skin temperature. While GSR’s silver electrodes are screwed on the band designed to stand flushed with the inner wrist, sensors are fitted on two encased printed circuit boards to form a wristband that can be worn like a watch to measure the deviations of neurophysiological data from the baseline indicative of stress response.

The Software

A flickering numbness tingles down the top of the index finger. Beads of sweat form slowly on the curve of the upper lip. Heat haloes around the neck. A deep intermittent breath momentarily relieves the tension in the shoulders that are tightly clenched.

The real-time biosensor data is retrieved via a mobile application that interacts with the Empatica E4 API. Using the device’s API key, the app fetches the data to be streamed into a backend Python script over the MQTT protocol – a lightweight messaging protocol for real-time data streams in IoT environments. The Python script performs several key tasks for processing the raw biosensor data retrieved from the Empatica E4 device.

Transduction#1

Flesh scratches down a mole triggered by a nervous itch. It rolls over and stretches across the bed, always making sure its head is cocooned in the blanket just enough for the nose to stick out. It’s cold. Flesh gets out of a shared taxi, pays the fare, and walks along the street. Its head isn’t covered; rather a lightweight cotton scarf is loosely hanging around its neck. The guidance patrol also known as the morality police has marked it down. It is now identified as her: a woman improperly dressed. She is now being chased down the street. The female officer in a black chador, gloves, and sunglasses is yelling at the top of her lungs warning her to stop. She keeps crouch running to camouflage behind the parked cars. She squeezes between a group of bystanders and a parked van, lies flat on the hot asphalt, and wiggles itself under the van. Its heart is pounding, and the blanket is wet with sweat.

Transduction#2

First, it handles the integration of multiple data streams, each with different sampling rates, synchronizing their timestamps to ensure temporal coherence: BVP at 64 Hz, accelerometer at 32, GSR and thermometer at 4 Hz. The script then normalises each stream of data. For example, z-score normalisation and min-max scaling is applied to align each signal to a common range, ensuring consistency for further processing. Consecutively, it applies signal filtering to enhance the quality of the data; for instance, a low-pass filter is applied to the BVP data to eliminate high-frequency noise and outliers, while a high-pass filter is used on accelerometer data as a way to focus on significant movement events. Additionally, the Python script derives key metrics from the raw data, such as heart rate variability from the BVP signal, motion velocity, and orientation from the accelerometer, and significant spikes from the GSR data that correlate with neurophysiological arousal.

Flesh is insurgent. Flesh is non-conscious; it oozes with proliferation. Flesh is all the neurotransmitters that have gone awry. The chemical imbalances; the adrenal insufficiency; the bad vasodilation; the rogue hormones. Flesh is compulsive. It’s moulded overtime. It acts upon its encodings, what’s in its ancestral memory and based on its encounters with the outside world. Flesh is reactive. It knows its inscriptions; doesn’t abide by temporality, ideology, and codes of computability: the means of prediction. Body frames flesh personally, culturally, socially, and politically. Pins and needles, fatigue, cold extremities, gut cramps, and mood fluctuations are indicative of generalized anxiety disorder, a symptom of being born and raised during the war, followed by sustained unpredictability and unsafety and being subject to gender-specific penitentiary measures and violence in the public sphere, followed by migration and exile. The familiar stories of power and coercion, the geopolitical framing, the mediation of political economy. But flesh always remembers what the body forgets without a value judgement. It acts without taking calculated risks; it’s persistent, unyielding, alive. Flesh is not me and I am not flesh.

MONA HEDAYATI

Mona Hedayati is an Iranian-Canadian artist working across performance, computation, sound, and sensory studies. She creates live events to imagine other ways of building social constitutions. Her projects have been presented internationally at large-scale art and technology institutions as well as care-oriented intimate venues that value establishing genuine relationships between artists and publics.