

T/ensor/~ 0.3

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1. PROGRAM NOTES

T/ensor/~ (version 0.3) is a work-in-progress prototype of a dynamic performance system developed in MAX that involves adaptive digital signal processing modules and generative processes towards exploring the field and performance practice of human-machine improvisation. The system is the result of a pilot, six-month artistic research study entitled ‘Improvisation Technologies and Creative Machines: The Performer-Instrument Relational Milieu’ (ITCM) funded by the UK’s AHRC Creative Industries Clusters Programme project: Creative Informatics · Data Driven Innovation for the Creative Industries (Small Research Grants 2022).

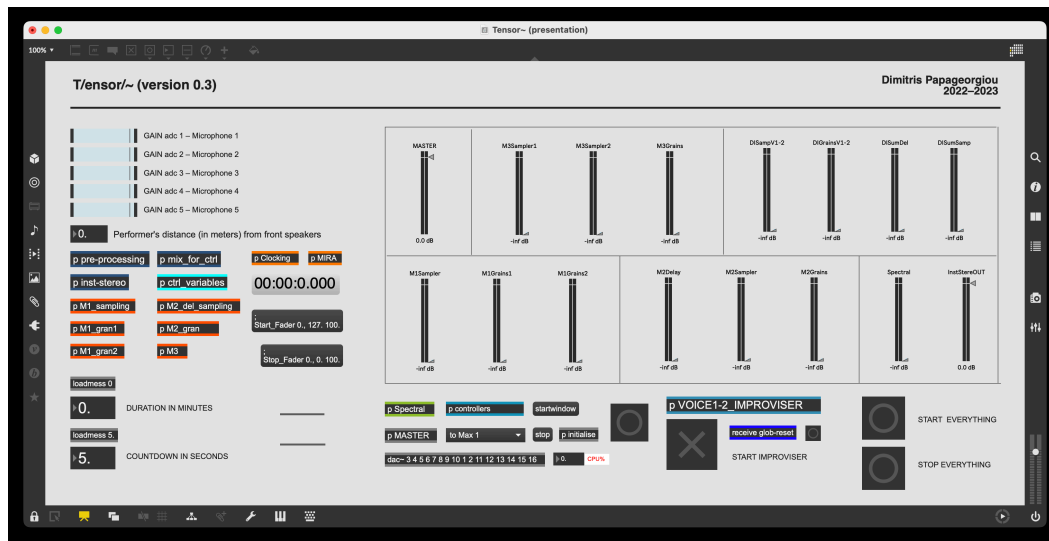


Fig. 1. The T/ensor/~ MAX patch

The practice-led, artistic research design of the ITCM project and the framework that led to the development of T/ensor/~ (Fig. 1) involved the tracing of relevant theoretical and practical understandings that explore the technicity of musical improvisation while building upon the author’s prior research on the fields of free improvisation, contemporary music notation, and electro-instrumental music. The project also invited performers/improvisers — Christos Michalakos (drum kit), Francisco Sánchez Díaz (saxophone), Richard Craig (flute) — to test and to play with the developed system and explored via its practice-led research methodology whether the HCI performance setting promotes a dialogic and co-produced improvisational musical space.

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2. PROJECT DESCRIPTION

At the core of the ITCM project that led to the development of the T/ensor/~ system was the epistemological tracing of, what George Lewis calls, “creative machines” [9] [10] [11] as well as the encoding of relevant free improvisation technologies — with the word ‘techno-logy’ understood here as the rhetorical accounts (*λόγος*, *lógos*) that harbour the *techne* (*τέχνη*, *tékhnē*) and technique of free improvisation. In this regard, the design methodology involved:

- The developing of adaptive digital signal processing modules [5] [6] towards exploring the notions of ‘instrumentality’ and ‘liveness’ [3] [16], and the composing of performance settings where listening and sound become “the basis for the articulation and unfolding of time” [7]. (Fig. 2)
- The translating of the principles of the notational environments I have been developing the last ten years [13] [14] [15] into generative processes and prototypes (Fig. 3) in an attempt to encode and to simulate the performer-instrument feedback relationship of ‘interaction, resonance, and resistance’ [2] as traced in free improvisers’ accounts — see, for example, the notion of *instrumental impulse* as discussed by Derek Bailey [1], or the concept of *biofeedback* as presented by Evan Parker [8].

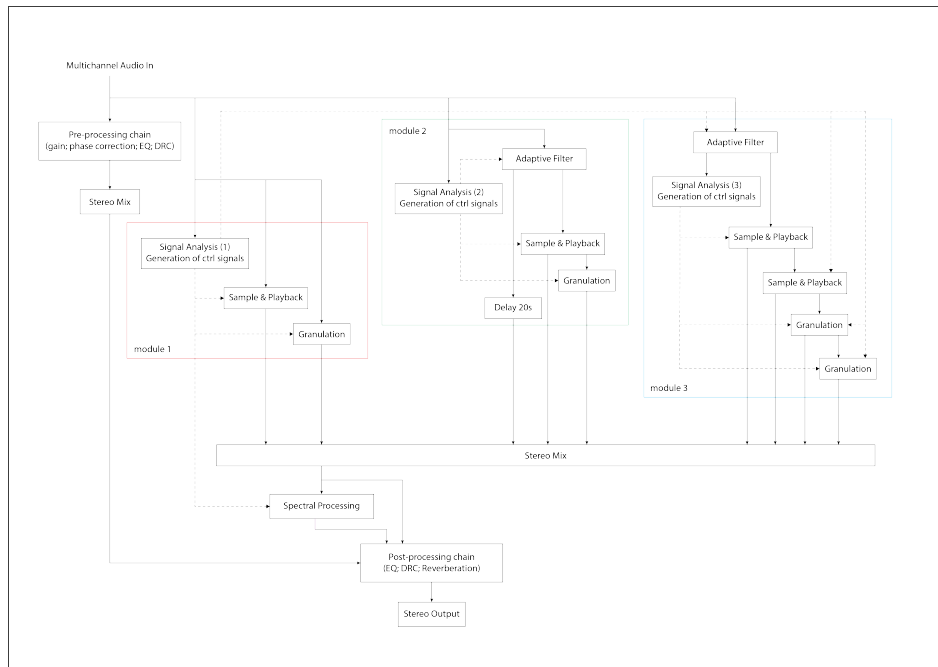


Fig. 2. Sketch of the adaptive DSP processes in T/ensor/~
(Emboldened lines: audio signals; Dashed lines: control signals)

In this sense, the T/ensor/~ system, in its current version, can be understood both as an adaptive instrument/environment that affords ‘the testing of boundaries and the uncovering of threshold conditions’ [17] through ‘encounters between modalities of listening’ [10], and as a composed, improvising/generative machine

that attempts to incorporate and to simulate into feedback mechanisms a material-dialogic ‘techno-logy’ and method for (free) improvisation.

The key artistic research, open-ended question of this work-in-progress is the encoding of the concept of “syn-schediasmos” [14] [15] — a compound of the Greek prefix *συν-* (*syn-*) as found in the word *σύνθεσις* (*synthesis*: composition), and the Greek noun *σχεδιασμός* (*schediasmos*) as found in the word *αυτοσχεδιασμός* (*autoschediasmos*: improvisation) — towards an envisaging of ‘composition’ and ‘improvisation’ as componential and dialogic settings, and as “critically imbued aesthetic spaces” [9]. Interestingly, the Greek prefix *syn-* and the Latin prefix *con-* that can be found in the semantically parallel words *σύνθεσις* (*synthesis*) and *composition*, originate from the prepositions *σύν* (*sún*) and *cum* respectively, both meaning ‘with’. In this regard, the word *tensor* aims in functioning as a metonym for the “in-between” [12] in an attempt to direct one’s attention to the “abstract machine” [4] that diagrammatises the relational milieu of correspondences between people, instruments, and ‘techno-logies’ — the ensorcelled *bodies* and *muscles* that “make music together” [9] and ‘co-draw’ (*σχεδιάζω*, *schediazō*: to draw) the improvised journey in ‘with-ness’ [14] [15].

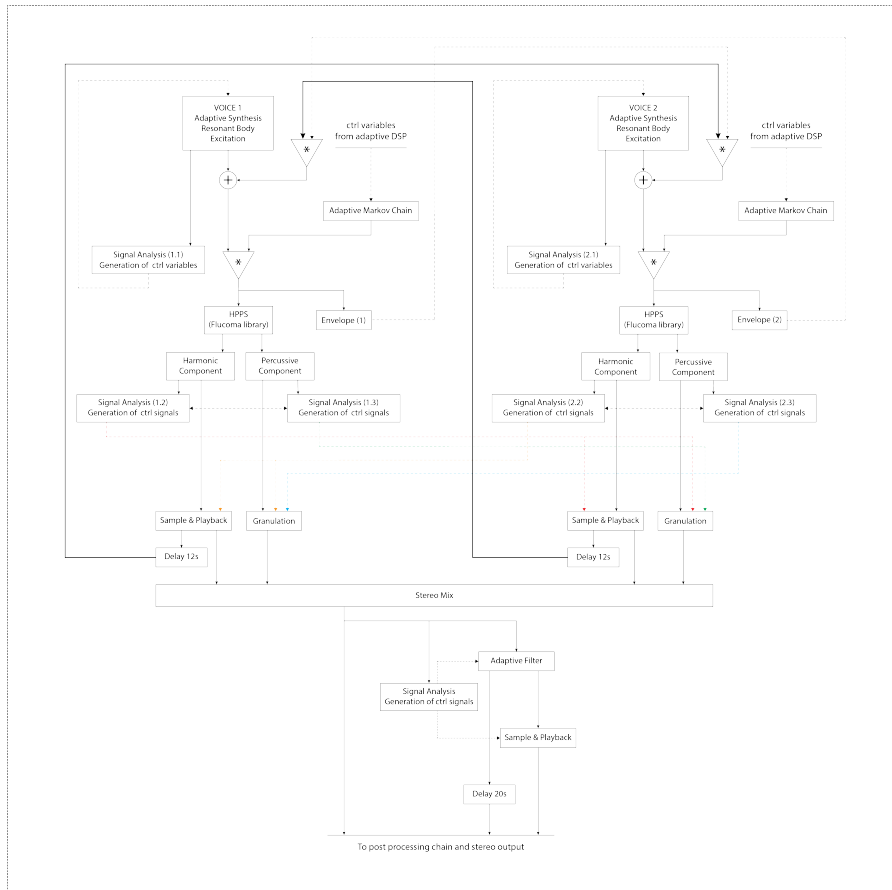


Fig. 3. Sketch of the generative processes in T/ensor/~
(Emboldened lines: audio signals; Dashed lines: control signals)

3. PERFORMANCE NOTES

Our proposal for the NIME 2023 conference involves a c.10–12 minutes improvised performance with the system (drum kit performer and T/ensor/~ version 0.3). Performers on stage: Christos Michalacos – Abertay University (drum kit); Dimitris Papageorgiou (system/levels monitoring). Technical requirements can be found in the table below.

Table I. Technical Requirements

Equipment provided by the author	Equipment provided by the conference
<ul style="list-style-type: none"> · Laptop with T/ensor/~ 0.3 · Audio Interface (RME UCX) · MIDI controller for levels monitoring 	<ul style="list-style-type: none"> · Drum Kit · Two large diaphragm condenser microphones (example: AKG 414) – drum kit overheads · One dynamic microphone (example: SM57) – snare · One dynamic microphone (example: Audix D6) – inside kick drum · One condenser microphone (example: Neumann U87) – floor, facing kick drum · Mic pre-amplifier with ADAT connectivity (example: Scarlett OctoPre; ADAT to the audio interface provided by the author) · Powered stereo monitors (example: Genelecs 8040, 8050 or similar) · Two pairs of headphones with ¼ TRS (on-stage monitoring; performer & author) · Headphones amplifier/splitter · Cabling infrastructure [5x XLR m-f (mics); 2x ¼ TRS to XLR m (RME to monitors); 1x ¼ TRS m-m (RME to headphones amplifier) & 2x ¼ TRS m-f extension cables (amplifier to headphones); 2x 4-way power extension leads]

4. MEDIA LINK(S)

- Edited excerpts from the ITCM test & play sessions with drummer/improviser Christos Michalacos (T/ensor/~ versions 0.1 & 0.2): <https://tinyurl.com/n7fp4vzt>
- The ITCM project website: <https://tinyurl.com/2nm2ej4k>

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