

Nimble Finger Studies/Etude Digitales

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1 Program Notes

Nimble Finger Studie/Etudes Digitales, for a trio of custom-made NIMEs—Electromagnetic (EM) Looms and Baremin Embroidery Hoops and the Magnetic Memory Rushnyk. The composition, consisting of 2 contrasting studies or movements, takes its title from the historically gendered and racialised anglophonic discourse surrounding so-called “nimble fingers” in electronics and craft labour. As Lucie Vágnerová observes, women workers in electronics assembly have been repeatedly characterised as “‘nimble fingers’, being ‘detail oriented’ and ‘obedient’,” a rhetoric that naturalises repetitive, small-scale bodily labour as feminine and unskilled[1].

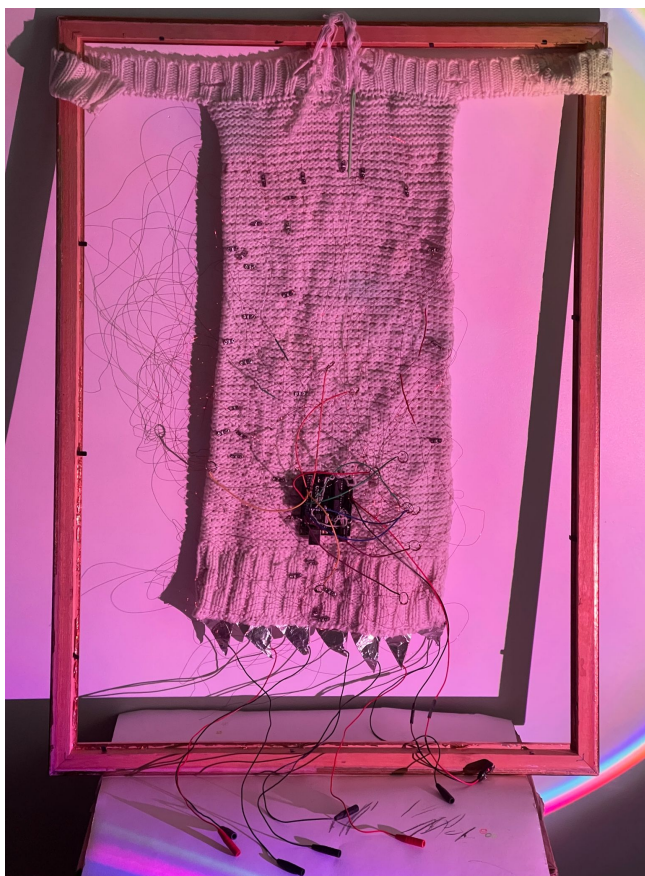


Fig. 1 Magnetic Memory Rushnyk front



Fig. 2 Magnetic Memory Rushnyk back

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Music Proceedings of the International Conference on New Interfaces for Musical Expression
NIME '26, June 23–26, 2026, London, UK



Fig. 3 EM Hoops and Baremin Embroidery Hoops

In Study 1 of Nimble Finger Studies/*Etudes Digitales*, each performer uses a three-hoop Baremin instrument built around an Arduino-based capacitive and electromagnetic sensing system [2]. A first embroidery hoop functions as the antenna interface: conductive wire and metallic appliques are stitched into the hoop are connected to the Baremin Arduino input and are read using a capacitive sensing routine, in which the performer's hand proximity and direct touch change the effective capacitance of the antenna and are converted into a continuous control signal. This signal drives the Baremin sound engine on the Arduino, producing a continuously varying pitch and amplitude response. The audio output of the Baremin is routed to a second embroidery hoop containing a custom hand-stitched copper-wire loudspeaker, driven from the Baremin amplifier stage [3]. A third embroidery hoop holds an electromagnetic pickup positioned over this stitched loudspeaker, capturing its very low-level signal. The pickup signal is then amplified and sent to the performance sound system. The instrument is performed bimanually: one hand plays the antenna hoop through hovering and touch to control the Baremin's pitch behaviour, while the other hand holds and positions the electromagnetic pickup hoop over the stitched speaker, shaping both the amplitude and timbral content by controlling distance and what portion of the speaker's field is captured.

In Study 2, the EM Hoops are joined by Magnetic Memory Rushnyk, a wall-hung textile instrument constructed from a traditional East Slavic Rushnyk into which magnetic cores and control voltage lines are woven. Sound is produced through performers navigating the surface with the EM Hoops, discovering signal, resonance, and interference through proximity, orientation, and slow tracing movements rather than through discrete controls. The Rushnyk functions as a fixed spatial field whose sonic behaviour is learned through embodied exploration, positioning, listening, navigation, and tactile attention as primary modes of performance. In contrast to the table-based micromovement focus of the Baremin Embroidery Hoops, Magnetic Memory Rushnyk extends the gestural vocabulary into large-

scale spatial movement across the textile surface, foregrounding the material and mnemonic qualities of cloth as both interface and score.

Study 1 features the Baremin Embroidery Hoop performers engage in virtuosic hand and finger gestures—pressing, kneading, brushing, hovering, and tracing—executed with fine gradations of force and proximity. These gestures are organised into etude-like, pianistic finger patterns that foreground speed, articulation, endurance, and micro-control. The work draws attention to the kinaesthetic labour of the hands themselves, reframing virtuosity as an accumulation of minute bodily actions rather than large-scale theatrical movement.

Study 2 brings the Baremin Embroidery Hoop into contact with Magnetic Memory Rushnyk. Study 2 focuses on slow, drone-like grooves that foreground the act of listening—listening to one another, and listening to the tactility, weight, and flow of the Rushnyk itself. The hoop performers move along the surface of the textile, tracing, lingering, and hovering over the fabric to find points of resonance and beating, between the Rushnyk and the Hoop. The music emerges through small positional shifts and collective pacing, allowing grooves to stabilise, drift, and slowly fracture. In this movement, the Rushnyk functions as a mnemonic field: sound is uncovered through slow navigation of cloth and electromagnetic traces, evoking often forgotten memories embedded in domestic and craft practices.

By staging highly focused fingerwork—in performance and fabrication of the textile interface—as the primary site of musical agency, Nimble Finger Studies/Etudes Digitales responds to Vágnerová’s call to account for how electronic sound practices are entangled with the disciplined bodily labour of women workers who build the very technologies through which contemporary electronic music is produced.

2 Project Description

Nimble Finger Studies forms part of project *Women’s Labor*, a multi-year feminist project that repurposes domestic and craft tools as digital musical instruments, to be featured in composition, installation, and performance.

Within the broader *Women’s Labor* instrument ecology, the Baremin Embroidery Hoop extend and contrast the gestural profiles of the other Embedded Acoustic Instruments. The Embedded Iron foregrounds downward, gross-motor arm movements associated with ironing; the Rheostat Rotary Rack demands expansive, whole-body engagement, including standing rotation, leaning, back-bending gestures, and even running. By contrast, the Baremin Embroidery Hoop center virtuosic finger and hand movements that are historically associated with classical instrument training, overlaid with extended techniques drawn from textile practice and electronic performance.

While many of *Women’s Labor’s* compositions emphasise theatricality and large-scale bodily spectacle, Nimble Finger Studies/Etudes Digitales is intentionally concentrated and intimate. The piece focuses on micromovements, endurance, and fine-grained control, making the performers’ fingers and hands the primary site of musical and visual attention.

This emphasis resonates with Vágnerová’s argument that electronics manufacturing relies on “exact bodily posture” and “tedious repetition of the same finger, eye, and limb movements,” and that such bodily discipline remains largely absent from dominant histories of electronic music.

To date, eight compositions have been created for *Women’s Labor*. These include:

- Ho, Jocelyn and Rebecca Lloyd-Jones. *A Killjoy Practice* (2026). Theatrical composition with Women's Labor instruments, radios, and objects.
- Ho, Jocelyn and Margaret Schedel. *Textile Rhetoric* (2025) For 2 Embedded Irons.
- Ho, Jocelyn, Margaret Schedel, and Sofy Yuditskaya. *Housework Commons* (2025). Theatrical composition with Women's Labor instruments, bowed psaltery, and objects.
- Schedel, Margaret. *Body of Resistance* (2023). For Rheostat Rotary Rack.
- Ho, Jocelyn. *Marzeline's Confessions* (2022). For Embedded Iron.
- Ho, Jocelyn and Margaret Schedel. *Housework Lock (Her) Down* (2020). For Multiple Embedded Irons. Published in *Women & Music Journal* (December 2021).
- Schedel, Margaret. *Ring Down* (2019). For solo Embedded Iron.
- Niloufar Nourbakhsh *Greyscale* (2021). For two Embedded Irons.

Nimble Finger Studies/*Etudes Digitales* contributes a focused investigation of gestural micro-labour within this larger body of work.

3 Technical Notes

Three sets of the Electromagnetic (EM) $L\ddot{o}\ddot{o}\ddot{o}\ddot{o}\ddot{o}\ddot{o}$ with Baremin Embroidery $H\ddot{o}\ddot{o}\ddot{o}\ddot{o}\ddot{o}$ are placed on a table and performed by three players. Each set contains an electromagnetic pickup that captures electromagnetic interference and signal activity generated through proximity and movement, individually amplified via a wireless RØDE microphone system, routed into a multi-channel audio interface. The combined signal is mixed and sent as a stereo line output to the PA system.

Magnetic Memory Rushnyk is 23 cm x 60 cm, hung on the wall. Sound is accessed using the same pickup hoops as above that sense electromagnetic and interference signals generated by the embedded materials and the surrounding electronic environment.

4 Media Link(s)

- Study 1 Video: <https://youtu.be/YNA01GRFE0s>
- Study 2 Video: <https://youtu.be/5OI1ZJcOlzo>

Acknowledgments

This work was supported by The University of Sydney, Stony Brook University, and De Vinci Higher Education, Paris.

Ethical Standards

This work does not involve human subjects research beyond artistic performance and documentation. No personal or sensitive data were collected. All performers participated voluntarily.

References

- [1] L. Vágnerová, "Nimble Fingers' in Electronic Music: Rethinking sound through neo-colonial labour," *Organised Sound*, 22(2), pp. 250–258, 2017.
- [2] J. Ho, M. Schedel, S. Yuditskaya. "Women's Labor: Weaving It All Together." ICMC 2025.
- [3] S. Yuditskaya. "Exploring Diverse Forms of Baremins: A Multifaceted Study on Painted Panels and Sculptures as The Site of Performance, Instruments, and Scores." *Proceedings of the International Conference on New Interfaces for Musical Expression*. 2024.