Trondheim EMP Repository processing

Øyvind Brandtsegg
Norwegian University of
Science and Technology,
Trondheim
oyvind.brandtseggntnu.no

Anna Xambó
Norwegian University of
Science and Technology,
Trondheim
anna.xambo@ntnu.no

Trond Engum
Norwegian University of
Science and Technology,
Trondheim
trond.engum@ntnu.no

Andreas Bergsland
Norwegian University of
Science and Technology,
Trondheim
andreas.bergsland@ntnu.no

Carl Haakon Waadeland
Norwegian University of
Science and Technology,
Trondheim
carl.haakon.waadeland@ntnu.no

ABSTRACT

The ensemble Trondheim Electroacoustic Music Performance (EMP) investigates new modes of communication in an ensemble when new technology is introduced as part of the ensemble repertoire. In the recent three years, the focus has been on crossadaptive processing as a musical intervention in the interplay. More info on the crossadaptive project can be seen at the project blog [3] and also the album Poke It With A Stick / Joining The Bots released in 2019. For more background on aspects of crossadaptive processing and performance, see [1, 2, 4, 5, 6]. For this performance we work with a web-based repository of sounds, explored via a live coding interface [7, 8]. This allows access to a massive archive of sounds from Freesound.org, and the selection of sounds is done via sound descriptors. The integration of this instrument in an ensemble setting is interesting, as traditional and nontraditional modes of musical interaction are activated in dialogue. Using web-based access to the repository allows a generality of instrument design, and this is combined with a strategic mode of performance in this instrument. With "strategic" we mean here, that most sounds are not performed directly by physical action, but cued up in patterns via live coding. These sounds are then live processed by other members of the ensemble, responding more directly with physical and gestural instrumental action on the signal coming from the web instrument. The signal is also live processed in a crossadaptive fashion, so that audio features extracted from other performers' actions will modulate the parameters of processing for the web audio instrument. The ensemble also utilize gesturally based interfaces from interactive dance, here used to control elements of audio synthesis and processing.

0.1 Audio documentation

The proposed performance is improvised, and as such we can not provide a recording of the actual piece to be performed. Rather we submit examples from this type of performances with the ensemble, from a session in June 2019. The recordings can be found here: *http://folk.ntnu.no/oyvinbra/wac2019/TEMP-14.06. 19-track5-mix1.1.wav*

0.2 Technical requirements

Øyvind (electronics)

- 2 output lines, balanced jack or XLR
- 2 solid music sheet stands for equipment (!)
- Small table (approx. 70x100 cm) for equipment
- 2 return lines (mono drums mix, dry vocal) for processing

Anna (electronics)

- 2 output lines, balanced jack or XLR
- Small table (approx. 70x100 cm) for equipment

Trond (guitar, electronics)

- 4 output lines, balanced jack or XLR
- Small table for equipment
- Guitar stand

Andreas (electronics)

- 2 output lines, balanced jack or XLR
- Small table (approx. 70x100 cm) for equipment

Carl Haakon (drums)

- 1 snare drum (on snare drum stand)
- 1 floor tom (preferably 14")
- 1 mounted small tom (preferably 10")
- 2 cymbal stands
- 1 drum chair
- 1 small table (for various percussion)
- Miking: 2 Overhead, 2 close mics

Monitoring

- Stereo monitoring with the same mix as the front of house sound. Approx 8 monitor speakers distributed between the musicians on stage.

0.3 Bios

Øyvind Brandtsegg is a composer and performer working in the fields of algorithmic improvisation and sound installations. Recent writings include *Csound: A Sound and Music Computing System* (Springer, 2016, with J. ffitch, S. Yi, J. Heintz, O. Brandtsegg, and I. McCurdy). His main instruments as a musician are the Hadron Particle Synthesizer, ImproSculpt and Marimba Lumina. Hadron is an extremely flexible realtime granular synthesizer, widely used within experimental sound design with over 200.000 downloads of the VST/AU version. Brandtsegg uses it for live processing of the acoustic sound from other musicians. As musician and composer he has collaborated with a number of excellent artists, e.g. Motorpsycho, Maja Ratkje, and he runs the ensemble Trondheim Electroacoustic Performance (T-EMP).

Anna Xambó is an experimental electronic music producer and researcher. Her musical practice includes live coding, multichannel spatialization, tangible music, collaborative interfaces, audience participation with mobile devices, and real-time music information retrieval. To date, she has released three solo recordings: "init" (2010, Carpal Tunnel), "On the Go" (2013, Carpal Tunnel) and "H2RI" (2018, pan y rosas). Her solo and group performances have been presented internationally in Denmark, Germany, Norway, Spain, Sweden, UK and USA, including "Hyperconnected Action Painting" (WAC 2017) and "Imaginary Berlin" (WAC 2018).

Trond Engum is a guitarist, composer and music-technologist. Engum has an international career as a composer and performer since mid 90's in bands such as "The Soundbyte", "The 3rd and The Mortal" and "T-EMP". His works are published through numerous recordings, tours and concerts on stages and festivals around the world. Engum has also composed music for several theatrical performances and television programs.

Andreas Bergsland has composed several pieces for interactive dance that have been presented in Norway, Sweden, Denmark, Germany, Austria, Greece, Italy, Canada and the US in collaboration with choreographer Robert Wechsler and others. He has also been involved in composition and sound design for exhibitions, installations, large-scale multi-media event, in addition to doing live-electronics performances and working with computer instrument design for motion capture systems. Together with the MotionComposer team he received a special recognition award in the 2016 Guthman Musical Instrument Competition.

Carl Haakon Waadeland is a drummer and researcher within empirical rhythm research and models of rhythm performance. He has participated on a large variety or recordings and tours with artists and bands like Dadafon, Anne-Lise Berntsen, Siri's Svale Band, Åge Aleksandersen & Sambandet, Warne Marsh, Kenny Wheeler, Mikis Theodorakis & Arja Saijonmaa. Waadeland has moreover published several articles in international journals, e.g.: Journal of New Music Research, 2001; Experimental Brain Research, 2009; NeuroImage, 2011; Journal of the Acoustical Society of America, 2015; Human Movement Science, 2017; Springer Lecture Notes in Computer Science, 2018.

2. REFERENCES

[1] M. Baalman, S. Emmerson, and Ø. Brandtsegg. Instrumentality, Perception and Listening in Crossadaptive Performance. In *Proceedings of the 2018 Conference on Live Interfaces*, 2018.

[2] Ø. Brandtsegg. A Toolkit for Experimentation with Signal Interaction. In *Proceedings of the 18th International Conference on Digital Audio Effects (DAFx-15)*, pages 42–48, 2015.

[3] Ø. Brandtsegg. Cross Adaptive Processing as Musical Intervention, 2019. http://crossadaptive.hf.ntnu.no/.

[4] Ø. Brandtsegg, T. Engum, and B. I. Wærstad. Working Methods and Instrument Design for Cross-Adaptive Sessions. In *Proceedings of the International Conference on New Interfaces for Musical Expression*, pages 1–6, Blacksburg, Virginia, USA, June 2018. Virginia Tech.

[5] Ø. Brandtsegg, S. Saue, and V. Lazzarini. Live Convolution with Time-Varying Filters. *Applied Sciences*, 8(1), 2018.

[6] J. D. Reiss and Ø. Brandtsegg. Applications of Cross-Adaptive Audio Effects: Automatic Mixing, Live Performance and Everything in Between. *Frontiers in Digital Humanities*, 5:17, 2018.

[7] A. Xambó, A. Lerch, and J. Freeman. Music Information Retrieval in Live Coding: A Theoretical Framework. *Computer Music Journal*, 42:9–25, 2019.

[8] A. Xambó, G. Roma, A. Lerch, M. Barthet, and G. Fazekas. Live repurposing of sounds: Mir explorations with personal and crowdsourced databases. In T. M. Luke Dahl, Douglas Bowman, editor, *Proceedings of the International Conference on New Interfaces for Musical Expression*, pages 364–369, Blacksburg, Virginia, USA, 2018. Virginia Tech.