

# Cumhur Erkut's List of Publications

## A Peer-reviewed scientific articles

### A1. Journal articles (refereed)

1. M. Laitinen, T. Pihlajamäki, C. Erkut, and V. Pulkki, "Parametric time-frequency representation of spatial sound in virtual worlds," *Transactions of Applied Perception*, vol. 2, no. 3, 2011. Accepted for publication.
2. (\*) A. Jylhä, I. Ekman, C. Erkut, and K. Tahiroğlu, "Design and Evaluation of Rhythmic Interaction with an Interactive Tutoring System," *Computer Music J.*, vol. 35, no. 2, pp. 1–13, 2011.
3. U. Şimşekli, A. Jylhä, C. Erkut, and A. T. Cemgil, "Real-Time Recognition of Percussive Sounds by a Model-Based Method," *EURASIP Journal on Advances in Signal Processing*, vol. 2011, 14 pages, 2011.
4. L. Peltola, C. Erkut, P. R. Cook, and V. Välimäki, "Synthesis of hand clapping sounds," *IEEE Transactions on Audio, Speech and Language Processing*, vol. 15, pp. 1021-1029, March 2007.
5. (\*) R. Rabenstein, S. Petrausch, A. Sarti, G. D. Sanctis, C. Erkut, and M. Karjalainen, "Block-based physical modeling for digital sound synthesis," *IEEE Signal Processing Magazine*, vol. 24, pp. 42-54, March 2007. Special issue on sound synthesis.
6. H. Penttinen, C. Erkut, J. Pölkki, V. Välimäki, and M. Karjalainen, "Design and analysis of a modified kantele with increased loudness," *Acta Acustica united with Acustica*, vol. 91, pp. 261-268, 2005.
7. (\*) M. Karjalainen and C. Erkut, "Digital waveguides vs. finite difference schemes: Equivalence and mixed modeling," *EURASIP Journal on Applied Signal Processing*, pp. 978-989, June 2004. Special Issue on Model-Based Sound Synthesis.
8. V. Välimäki, H. Penttinen, J. Knif, M. Laurson, and C. Erkut, "Sound synthesis of the harpsichord using a computationally efficient physical model," *EURASIP Journal on Applied Signal Processing*, pp. 934-948, June 2004. Special Issue on on Model-Based Sound Synthesis.
9. V. Välimäki, M. Laurson, and C. Erkut, "Commutated Waveguide Synthesis of the Clavichord," *Computer Music Journal*, vol. 27, pp. 71-82, Spring 2003.
10. C. Erkut, M. Karjalainen, P. Huang, and V. Välimäki, "Acoustical analysis and model-based sound synthesis of the kantele," *Journal of the Acoustical Society of America*, vol. 112, pp. 1681-1691, October 2002.
11. M. Laurson, C. Erkut, V. Välimäki, and M. Kuuskankare, "Methods for Modeling Realistic Playing in Acoustic Guitar Synthesis," *Computer Music Journal*, vol. 25, no. 3, pp. 38-49, 2001.

### A2. Review articles

12. (\*) G. Widmer, D. Rocchesso, V. Välimäki, C. Erkut, F. Gouyon, D. Pressnitzer, H. Penttinen, P. Polotti, and G. Volpe, "Sound and music computing: Research trends

and some key issues," *Journal of New Music Research*, vol. 36, no. 3, pp. 169-184, 2007

13. (\*) V. Välimäki, J. Pakarinen, C. Erkut, and M. Karjalainen, "Discrete-time modelling of musical instruments," *Reports on Progress in Physics*, vol. 69, pp. 1-78, January 2006. Invited paper.
14. M. Karjalainen, T. Tolonen, V. Välimäki, C. Erkut, M. Laurson, and J. Hiipakka, "New techniques and effects in model-based sound synthesis," *Journal of New Music Research*, vol. 30, no. 5, pp. 203-212, 2001.

### **A3. Book sections and chapters in research books**

15. (\*) C. Erkut, A. Jylhä, and D. Rocchesso, "Heigh ho: Rhythmicity in sonic interaction," in *Sonic Interaction Design* (S. Serafin and K. Franinovic, eds.), Boston, MA, USA: MIT Press, April 2012. In press.
16. C. Erkut, V. Välimäki, M. Karjalainen, and H. Penttinen, "Physics-based sound synthesis," in P. Polotti and D. Rocchesso (ed.) *Sound to Sense - Sense to Sound: A state of the art in sound and music computing*, (Logos Verlag Berlin GmbH), pp. 303-343, 2008.

### **A4. Articles in refereed conference proceedings**

17. A. Jylhä, C. Erkut, U. Simsekli, and A. T. Cemgil, "Sonic Handprints: Person Identification with Hand Clapping Sounds by a Model-Based Method," in *Proc. AES 45th International Conference* (Helsinki, Finland, March 2012). Accepted for publication.
18. J. Kostiaainen, C. Erkut, and F. B. Piella, "Design of an Audio-based Journey Planner Application," in *Proc. Academic MindTrek'11* (Tampere, Finland, September 2011).
19. A. Jylhä and C. Erkut, "Auditory Feedback in an Interactive Rhythmic Tutoring System," in *Proc. Audio Mostly* (Coimbra, Portugal, September 2011).
20. (\*) C. Erkut, A. Jylhä, and R. Dişçiöğlü, "A structured design and evaluation model with application to rhythmic interaction displays," in *Proc. New Interfaces for Musical Expression (NIME)*, (Oslo, Norway, 2011), pp. 477-480.
21. S. Delle Monache, D. Hug, and C. Erkut, "Basic exploration of narration and performativity for sounding interactive commodities," in *Proc. Intl. Haptic and Auditory Interaction Design Workshop* (Copenhagen, Denmark, Sept. 2010), pp. 7-13.
22. A. Jylhä, C. Erkut, M. Pesonen, and I. Ekman, "Simulation of Rhythmic Learning - A Case Study". *Proc. Audio Mostly*, (Piteå, Sweden, August 2010).
23. M. Ercan Altinsoy, S. Merchel, I. Navarro, L. Borrmann, M. Hesse, C. Erkut, and A. Jylhä, "Physically-based Synthesis and Modeling of Xylophones for Auditory-Tactile Virtual Environments". In *Proc. Intl. Haptic and Auditory Interaction Design Workshop* (Dresden, Germany, Sept. 2009), vol. 2, pp. 32-33.
24. C. Erkut, A. Jylhä, and I. Ekman, "Recent advances in exploring self-induced sonic interactions in the context of performing arts". In *Proc. Intl. Haptic and Auditory Interaction Design Workshop* (Dresden, Germany, Sept. 2009), vol. 2, pp. 4-5.

25. A. Jylhä, C. Erkut, I. Ekman, and K. Tahiroğlu, "iPalmas - an interactive flamenco rhythm machine," in *Proc. Audio Mostly*, (Glasgow, Scotland, UK, September 2009).
26. (\*) A. Jylhä and C. Erkut, "A Hand Clap Interface for Sonic Interaction with the Computer". In *Proc. Conf. Human Factors in Computing Systems (CHI)* (Boston, MA, USA, Apr. 2009), pp. 3175–3180. Presented in interactivity.
27. A. Jylhä and C. Erkut, "Sonic interactions with hand clap sounds," in *Proceedings of Audio Mostly*, (Piteå, Sweden), pp. 93-100, October 22-23 2008.
28. C. Erkut, A. Jylhä, M. Karjalainen, and E. M. Altinsoy, "Audio-tactile interaction at the nodes of a block-based physical sound synthesis model," in *Proc. 3rd International Haptic and Auditory Interaction Design Workshop*, vol. 2, (Jyväskylä, Finland), pp. 25-26, September 15-16 2008.
29. A. Jylhä and C. Erkut, "Inferring the hand configuration from hand clapping sounds," in *Proc. 11th International Conference on Digital Audio Effects*, (Espoo, Finland), pp. 300-304, September 1-4 2008
30. K. Tahiroğlu, H. Drayson, and C. Erkut, "An interactive bio-music improvisation system," in *Proc. International Computer Music Conference*, (Belfast, UK), August 24-29 2008.
31. C. Erkut, J.-J. Filatriau, R. Lehembre, and I. Ekman, "Sonic interaction design with physiological interfaces in a workshop setting," in *Proceedings of the CHI 2008 Workshop Sonic Interaction Design: Sound, Information, and Experience*, (Florence, Italy), pp. 47-52, April 6 2008
32. C. Erkut and K. Tahiroğlu, "ClaPD: A testbed for control of multiple sound sources in interactive and participatory contexts," in *PureData Convention 2007*, (Montreal, Canada), August 21-26 2007. Online proceedings.
33. C. Erkut, "Towards physics-based control and sound synthesis of multi-agent systems: Application to synthetic hand clapping," in *Nordic Music Technology Conference 2006*, (Trondheim, Norway), October 12-14 2006.
34. C. Erkut, "Modular interactions and hybrid models: A conceptual map for model-based sound synthesis," in *13th European Signal Processing Conference*, (Antalya, Turkey), September 4-8 2005. CD-ROM Proceedings. Special session on Model-based Sound Synthesis.
35. M. Karjalainen, J. Pakarinen, C. Erkut, P. A. A. Esquef, and V. Välimäki, "Recent advances in physical modeling with k- and w-techniques," in *The 7th International Conference on Digital Audio Effects*, (Naples, Italy), pp. 107-112, October 5-8 2004.
36. M. Karjalainen, C. Erkut, and L. Savioja, "Compilation of unified physical models for efficient sound synthesis," in the *IEEE International Conference on Acoustics, Speech and Signal Processing*, vol. V, (Hong Kong, China), pp. 433-436, April 6-10 2003.
37. C. Erkut and M. Karjalainen, "Finite Difference Method vs. Digital Waveguide Method in String Instrument Modeling and Synthesis," in *International Symposium*

- on Musical Acoustics, (Mexico City, Mexico), December 9-13 2002. CD-ROM Proceedings.
38. C. Erkut and M. Karjalainen, "Virtual Strings Based on a 1-D FDTD Waveguide Model: Stability, Losses, and Traveling Waves," in the AES 22nd International Conference on Virtual, Synthetic and Entertainment Audio, (Espoo, Finland), pp. 317-323, June 15-17 2002.
  39. C. Erkut, M. Laurson, M. Kuuskankare, and V. Välimäki, "Model-Based Synthesis of the Ud and the Renaissance Lute," in the International Computer Music Conference, (Havana, Cuba), pp. 119-122, September 18-22 2001.
  40. C. Erkut, "Loop Filter Design Techniques for Virtual String Instruments," in *Proc. International Symposium on Musical Acoustics*, vol. 1, (Perugia, Italy), pp. 259-262, September 10-14 2001.
  41. C. Erkut, "Model Order Selection Techniques for the Loop Filter Design of Virtual String Instruments," in the *Proc. 5th World Multi-Conference on Systemics, Cybernetics and Informatics*, vol. 10, (Orlando, FL, USA), pp. 529-534, July 22-25 2001. Special session on Physical Modeling.
  42. M. Laurson, C. Erkut, and V. Välimäki, "Methods for Modeling Realistic Playing in Plucked-String Synthesis: Analysis, Control and Synthesis," in the *COST-G6 Conference on Digital Audio Effects*, (Verona, Italy), pp. 183-188, December 7-9 2000.
  43. C. Erkut and V. Välimäki, "Model-Based Sound Synthesis of Tanbur, a Turkish Long-Necked Lute," in the *International Conference on Acoustics, Speech and Signal Processing*, vol. 2, (Istanbul, Turkey), pp. 769-772, June 5-9 2000.
  44. C. Erkut, V. Välimäki, M. Karjalainen, and M. Laurson, "Extraction of Physical and Expressive Parameters for Model-Based Sound Synthesis of the Classical Guitar," in the 108th AES Convention, (Paris, France), February 19-22 2000.
  45. V. Välimäki, M. Karjalainen, T. Tolonen, and C. Erkut, "Nonlinear Modeling and Synthesis of the Kantele - A Traditional Finnish String Instrument," in the International Computer Music Conference, (Beijing, China), pp. 220-223, October 22-28 1999.
  46. C. Erkut, T. Tolonen, M. Karjalainen, and V. Välimäki, "Acoustical Analysis of Tanbur, a Turkish Long-Necked Lute," in the Sixth International Congress on Sound and Vibration, vol. 1, (Lyngby, Denmark), pp. 345-352, July 5-8 1999.
  47. A. T. Cemgil and C. Erkut, "Calibration of physical models using artificial neural networks with application to plucked string instruments," in International Symposium on Musical Acoustics, (Edinburgh, UK), vol. 1, pp. 240-245, August 19-22 1997.

## **B. Non-refereed scientific articles**

### ***B2. Non-refereed book section***

48. (\*) C. Erkut, S. D. Monache, and D. Rocchesso, "Product sound design," in *Explorations in Sonic Interaction Design*, Berlin, Germany: Logos Verlag, 2011, Chapter 8, pp. 35-38.

### **B3. Non-refereed conference proceedings**

49. (\*) C. Erkut, "Product sound design: past, present, and future" in *Akustiikkapäivät* (Tampere, Finland), May 2011.
50. V. Pulkki, M.-V. Laitinen, and C. Erkut, "Efficient spatial sound synthesis for virtual worlds," in *Proc. AES 35th International Conference*, (London, UK), February 11-13 2009.
51. J. Olajec, C. Erkut, and R. Jarina, "GA-based feature selection for synchronous and asynchronous applause detection," in *Proc. Finnish Signal Processing Symposium*, (Oulu, Finland), August 30 2007. CD-ROM proceedings.
52. H. Penttinen, J. Pölkki, V. Välimäki, M. Karjalainen, and C. Erkut, "Äänekkäämmän kanteleen suunnittelu ja analyysi," in *Akustiikkapäivät 2005*, (Kuopio, Finland), pp. 42-47, September 26-27 2005. In Finnish.
53. V. Välimäki, H. Penttinen, J. Knif, M. Laurson, and C. Erkut, "Cembalon äänen analyysi ja synteesi," in *Akustiikkapäivät 2003*, (Turku, Finland), pp. 129-134, October 6-7 2003. In Finnish.
54. C. Erkut, T. Tolonen, V. Välimäki, and M. Karjalainen, "Acoustics of tanbur, a Turkish long-necked lute," in *Akustiikkapäivät 1999*, (Tampere, Finland), pp. 93-98, October 4-5 1999.

### **C. Scientific books**

55. J. Pakarinen, C. Erkut, H. Penttinen, and V. Välimäki, eds, "Proceedings of the 11th Conference on Digital Audio Effects," (Espoo, Finland), September 1-4, 2008. ISBN: 978-951-22-9516-6

### **D. Publications intended for professional communities**

56. C. Erkut and A. Jylhä, "Rhythmic blueprints: A tutorial for design and evaluation of rhythmic interaction", in *Proc. Academic MindTrek*, Tampere, Finland, September 29, 2011.
57. C. Erkut, "Developing tools for sonic interaction" FP7 VISNET II NoE Invited Position Paper, December 2007.
58. C. Erkut, "The sound of many real and virtual hands clapping: A research outline" in *Sound is Motion Symposium*, Dept. Speech, Music and Hearing, KTH, Stockholm, Sweden, February 11, 2010. Invited talk.
59. C. Erkut, A. Jylhä, and M. Karjalainen, "Interacting with virtual musical instruments at the junction nodes," in *ASA-EAA Acoustics'08 Paris*, (Paris, France), June 29 - July 4 2008. Invited talk.

### **E. Publications intended for the general public, linked to the applicant's research**

60. C. Erkut, "Mallinnusalgoritmeja vuorovaikutteiseen äänisuunnittelun - äänisynteesi, ohjaus ja monitasoiset tapahtumat (SCHEMA-SID)", press release for Academy of Finland Tiedeaamiainen, December 2008.

## **G. Theses**

### ***G1. Doctoral dissertation (article)***

61. C. Erkut, Aspects in Analysis and Model-Based Sound Synthesis of Plucked String Instruments. Doctoral thesis, Helsinki University of Technology, Laboratory of Acoustics and Audio Signal Processing, Espoo, Finland, November 2002.

## **H. Patents and invention disclosures**

62. A. Jylhä, and C. Erkut, “Method for Controlling an Apparatus”, Finnish and International Patent, in process.
63. S. Disch, V. Pulkki, M.-V. Laitinen, and C. Erkut, “An apparatus for determining a spatial output multi.channel audio signal.” *European Patent EP2154911 and International Patent WO2010/017967*, 2010.
64. T. Salmi, T. Salmi, A. Jylhä, V. Välimäki, and C. Erkut, “System for Sports Activity” *International Patent Application Number PCT/FI2008/050624*, 2009.

## **I. Audiovisual material, ICT software**

65. C. Erkut, L. Peltola, and K. Tahiroğlu: ClaPD: a Pure Data library for hand clapping synthesis. Available at <http://www.acoustics.hut.fi/software/clapd/>

Scopus h-index=7, citations=120, as of Wednesday, December 21, 2011