

## Publications

### Tomi Heinonen

#### Theses

1. **Heinonen T.** 1994. Three-Dimensional Presentation of Medical Images and Signals, *Master of Science in Engineering Thesis*, Tampere University of Technology, 101 p.
2. **Heinonen T.** 1996. Segmentation and Presentation of Magnetic Resonance Images of the Brain, *Licentiate Thesis*, Tampere University of technology, 107 p.
3. **Heinonen T.** 1999. Applications of Magnetic Resonance Image Segmentation in Neurology, *Doctoral Thesis*, Tampere University of Technology, 97 p.
4. Halonen H., **Heinonen T.**, Kaminen-Kandelin M., Knuutila J., Viitala J., 2006. Opettajan keittokirja - Kasvu oppilaasta opettajaksi: käyttöteorian kehittyminen ja muuttuminen ajan sekä kokemuksen myötä. Short thesis on pedagogics / didactics, Tampere polytechnics, Teacher school, 70 page book + 40 page report.

#### Articles in Refereed International Scientific Journals

5. **Heinonen, T.**, Eskola, H., Dastidar, P., Laarne, P. & Malmivuo, J. 1997. Segmentation of T1 MR Scans for Reconstruction of Resistive Head Models. *Computer Methods and Programs in Biomedicine* 54, p. 173-181.
6. **Heinonen, T.**, Dastidar, P., Kauppinen, P., Malmivuo, J. & Eskola, H. 1998. Semi-automatic Tool for Segmentation and Volumetric Analysis of Medical Images. *Medical & Biological Engineering & Computing* 36, 3, p. 291-296.
7. **Heinonen T.**, Dastidar P, Eskola H, Frey H, Ryymin P, Laasonen E. 1998. Applicability of semi-automatic segmentation for volumetric analysis of brain lesions, *Journal of Medical Engineering & Technology*, 33(4): 173-178.
8. **Heinonen T.**, Visala K, Blomqvist M, Eskola H, Frey H. 1998. 3D Visualization library for multimodal medical images, *Computerized Medical Imaging and Graphics*, 22(4): 267-273.
9. **Heinonen T.**, Lahtinen A, Häkkinen V. 1999. Implementation of Three-Dimensional EEG Brain mapping, *Computers and Biomedical Research*, 32(2):123-131.
10. **Heinonen T.**, Dastidar P, Frey H, Eskola H. 1999. Applications of MR Image Segmentation, *International Journal of Bioelectromagnetism*, 1(1):35-46.
11. **Heinonen T.**, Dastidar P. 2001. Segmentation of Voxel Based Medical Images, *International Journal of Bioelectromagnetism*, 3(2):46-50.
12. **Heinonen T.**, Dastidar P. 2002. Computer Aided Medical Image Diagnosis Enabling Electrophysiological Simulation Studies, *International Journal of Bioelectromagnetism* 4(1).
13. Dastidar P, Numminen J, **Heinonen T.**, Ryymin P, Rautiainen M, Laasonen E. 1999. Nasal airway volumetric measurement using segmented HRCT images and acoustic rhinometry, *American Journal of Rhinology*, 13(2):97-103.
14. Dastidar P, **Heinonen T.**, Numminen J, Höckert A, Rautiainen M. 1998. Semiautomatic segmentation of CT images in volumetric estimation of airways in nasal cavity and paranasal sinuses, *European Archives of Otorhinolaryngology*, 256(4):192-198.
15. Dastidar P, **Heinonen T.**, Vahvelainen T, Elovaara I, Eskola H. 1999. Computerized volumetric analysis of lesions in multiple sclerosis using a new semiautomatic segmentation software, *Medical & Biological Engineering & Computing*, 37:104-107.
16. Kauppinen, P., Hyttinen, J., **Heinonen, T.**, Malmivuo, J. 1998. Detailed Model of the Thorax as a Volume Conductor Based on the Visible Human Man Data. *Journal of Medical Engineering & Technology* 22, 3, p. 126-133.
17. Dastidar P, **Heinonen T.**, Lehtimäki T, Ukkonen M, Peltola J, Erilä T, Laasonen E, Elovaara I. 1999. Volumes of brain atrophy and plaques correlated with neurological disability in secondary progressive multiple sclerosis, *Journal of Neurological Sciences*, 165:36-42.
18. Frey H, Lahtinen A, **Heinonen T.**, Dastidar P. 1999. Clinical applications of MRI image processing in neurology, *International Journal of Bioelectromagnetism*, 1(1):47-53.

19. Uotila, J., Dastidar, P., **Heinonen, T.**, Ryymin, P., Punnonen, R., Laasonen, E. 2000. Magnetic resonance imaging compared to ultrasonography in fetal weight and volume estimation in diabetic and normal pregnancy, *Acta Obstetrica et Gynecologica Scandinavica*, vol 79:255-259.
20. Dastidar P, **Heinonen T**, Ahonen JP, Jehkonen M, Molnar G. 2000. Volumetric measurements of right cerebral hemisphere infarction: use of a semiautomatic MRI segmentation technique. *Comput Biol Med*, 30(1):41-54.
21. Dastidar P, Mäenpää J, **Heinonen T**, Kuoppala T, Van Meer M, Punnonen R, Laasonen E. 2000. Magnetic Resonance Imaging Based Volume Estimation of Ovarian Tumours: Use of a Segmentation and 3D Reformation Software, *Computers in Biology and Medicine* 30, p. 329-340.
22. Numminen J, Dastidar P, **Heinonen T**, Karhuketo T, Rautiainen M. 2003. Reliability of acoustic rhinometry. *Respiratory Medicine* 97(4):421-427.
23. Ukkonen M, Dastidar P, **Heinonen T**, Laasonen E, Elovaara I. 2003. Volumetric Quantitation by MRI in primary progressive Multiple Sclerosis: Volumes of plaques and atrophy correlated with neurological disability. *European Journal of Neurology* 10(6):663-669.
24. Ainiala H, Hietaharju A, Dastidar P, Loukkola J, Lehtimäki T, Peltola J, Korpela M, **Heinonen T**, Nikkari ST. Increased serum matrix metalloproteinase 9 levels in systemic lupus erythematosus patients with neuropsychiatric manifestations and brain magnetic resonance imaging abnormalities. *Arthritis Rheum*. 2004 Mar;50(3):858-65.
25. Laurila M, Dastidar P, Pertovaara H, Järvenpää R, Luukkaala T, Kellokumpu-Lehtinen P-L, **Heinonen T**, Eskola H, Soimakallio S, Volumetric analysis with semi-automatic segmentation: application on non-Hodkin's lymphoma at 1.5 T MRI. Accepted to: *J Comput Ass Tomogr*, 2008.
26. Rossi M, Pertovaara H, Dastidar P, Järvenpää, R, Luukkaala, T, Rautakunnas S, **Heinonen, T**, Eskola, H, Soimakallio, S, Kellokumpu-Lehtinen P, CT-Based Tumor Volume in Non-Hodgkin's Lymphoma: Clinical Correlation and Comparison with MRI. Accepted to: *J Comput Ass Tomogr*, 2008.
27. Lara C.V. Harrison, Tiina Luukkaala, Hannu Pertovaara, Tuomas O. Saarinen, **Tomi T. Heinonen**, Ritva Järvenpää, Seppo Soimakallio, Pirkko-Liisa I. Kellokumpu-Lehtinen, Hannu J. Eskola and Prasun Dastidar Title : Non-Hodgkin Lymphoma response evaluation with MRI Texture Classification, Journal of Experimental & Clinical Cancer Research MS : 1747252100260669.
28. Sami Savio, Lara Harrison, Tiina Luukkala, **Tomi Heinonen**, Prasun Dastidar, Seppo Soimakallio, Hannu Eskola. Effect of slice thickness on brain magnetic resonance image texture analysis. *Biomedical Engineering Online*, vol. 9, 2010. Doi: 10.1186/1475-925X-9-60.

#### **Short Papers in Refereed International Scientific Journals**

29. **Heinonen, T.**, Eskola, H. & Malmivuo, J. 1996. IARD Method for Segmentation of Tissues in MR Scan of the Head. *Medical & Biological Engineering & Computing*. 34. Suppl.1,Part1, p. 233-234.
30. **Heinonen, T.**, Eskola, H., Kauppinen, P. & Malmivuo, J. 1996. Tissue Segmentation of Visible Human Man Data Using IARD Method. *Medical & Biological Engineering & Computing*. 34. Suppl.1,Part1, p. 239-240.
31. **Heinonen T.**, Eskola H., Dastidar P., Lahtinen A., Heikkinen S. 1999. Requirements for modern medical image visualization software, *Medical & Biological Engineering & Computing*, 37. Suppl 1. p. 130-131.
32. **Heinonen, T.**, Hyttinen, J. A., Laarne, P., Kauppinen, P., Eskola, H. & Malmivuo, J. A. 1995. Modelling and visualization of thorax anatomy and electrical fields. Proceedings of the Special Scientific Meeting of Computers in Cardiology, 15.9.1995, Budapest, Hungary. *Cardiologia Hungarica* 24, Suppl. 4, p. 29-32.
33. Dastidar P, **Heinonen T**, Virta T, Kuurne T. 1999. Use of semiautomatic segmentation and three-dimensional reformations in the evaluation of intracranial tumors, *Medical & Biological Engineering & Computing*, 37 (suppl 1): 268-269.
34. Dastidar P, **Heinonen T**, Mäenpää J, Punnonen R, Laasonen E. 1999. Three-dimensional MRI volume imaging and segmentation in estimation of ovarian tumors, *Medical & Biological Engineering & Computing* 37 (suppl 1): 271-272.
35. Frey, H., Pietilä, T., **Heinonen, T.** & Laasonen, E. 1996. Towards the Workstation of the Neurologist / Neurosurgeon. *Medical & Biological Engineering & Computing*. 34. Suppl.1,Part1, p. 269-270.

36. Dastidar, P., Ryymin, P., **Heinonen, T.**, Peltola, J. & Elovaara, I. 1996. Semiautomatic Technique for Measuring Lesion Volumes Using MR Segmentation in the Treatment and Follow-up of Multiple Sclerosis Patients. *Medical & Biological Engineering & Computing*. 34. Suppl.1,Part1, p. 241-242.
37. Dastidar P, **Heinonen T**, Peltola J, Ukkonen M, Lehtimäki T, Eirilä T, Elovaara I. 1998. Correlation between neurological dysfunction, volumes of plaques and atrophy in multiple sclerosis using a semiautomatic MRI segmentation method. American Academy of Neurology, 50th Annual Meeting, Minneapolis, MN, April 25-May 2, 1998, Supplement 4 to *Neurology*. 50. Minneapolis, USA. Lippincott-Raven Publishers. 4, p. A107.
38. Lahtinen, A., **Heinonen, T.**, Dastidar, P. & Frey, H. 1998. Using a Computerized Brain Atlas for Identification of Brain Lesions in MRI. American Academy of Neurology, 50th Annual Meeting, Minneapolis, MN, April 25-May 2, 1998, Supplement 4 to *Neurology*. 50. Minneapolis, USA. Lippincott-Raven Publishers. 4, p. A38.
39. Dastidar, P., Vahvelainen, T., **Heinonen, T.**, Ryymin, P., Elovaara, I. & Frey, H. 1997. Semiautomatic Segmentation of MR Images of the Brain in Multiple Sclerosis. Abstracts of the XVI World Congress of Neurology, Buenos Aires, Argentina, September 14-19, 1997. In: *Journal of the Neurological Sciences*, Supplement to vol 150. 150. Elsevier. S1-S367, p. S328.
40. Dastidar, P., Kulkas, T., **Heinonen, T.**, Lahtinen, A., Ryymin, P. & Frey, H. 1997. MR Volumetry and Digital Neuroanatomic Mapping in Vascular Dementia. Abstracts of the XVI World Congress of Neurology, Buenos Aires, Argentina, September 14-19, 1997. In: *Journal of the Neurological Sciences*, Supplement to vol 150. 150. Elsevier. S1-S367, p. S328.
41. Dastidar, P., Jehkonen, M., Ahonen, J-P., Molnar, G., **Heinonen, T.**, Ryymin, P. & Frey, H. 1997. Quantitative Analysis of Right Cerebral Hemisphere Infarctions Using a Semiautomatic Segmentation Method. Abstracts of the XVI World Congress of Neurology, Buenos Aires, Argentina, September 14-19, 1997. In: *Journal of the Neurological Sciences*, Supplement to volume 150. 150. Elsevier. S1-S367, p. S125.
42. Laarne, P., Dodel, S., Hyttinen, J., **Heinonen, T.**, Malmivuo, J. & Eskola, H. 1997. An EEG Dipole Localization Procedure using a Realistic Volume Conductor Model. In: *Medical & Biological Engineering & Computing*. World Congress on Medical Physics and Biomedical Engineering, Nice, France, 14.-19.09.1997. France. p. 8.
43. Hyttinen, J., Kauppinen, P., **Heinonen, T.**, Laarne, P., Eskola, H. & Malmivuo, J. 1996. Application of the Visible Human Man Data to Calculate the Sensitivity of ECG Leads to Detect Myocardial Sources. *Medical & Biological Engineering & Computing*. 34. Suppl.1,Part2, p. 85-86.

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44. **Heinonen, T.**, Dastidar, P., Ryymin, P., Lahtinen, A., Eskola, H. & Malmivuo, J. 1997. Quantitative assessment of MS plaques and brain atrophy in multiple sclerosis using semiautomatic segmentation method. In: Hoffman, E. A. (ed.) Proceedings of SPIE, Medical Imaging 1997, California, USA, 23-25 February 1997. 3033. USA. The International Society for Optical Engineering. p. 132-139.
45. **Heinonen T.**, Lahtinen A, Dastidar P, Ryymin P, Laarne P, Malmivuo J, Laasonen E, Frey H, Eskola H. 1999. Applications of magnetic resonance image segmentation in neurology, SPIE proceedings of Medical Imaging 1999, vol 3658:569-579.
46. Hyttinen J., Kauppinen P., **Heinonen T.**, Laarne P., Eskola H., Malmivuo J. 1996. Application of the Visible Human Man Data for Modelling of the Human Thorax as a Volume Conductor, Published in *J Liebman: Electrocardiology – From the Cell to the Body Surface*, ISBN 981-02-3109-1, p. 173-177.
47. Dastidar, P., **Heinonen, T.**, Virta, T., Ryymin, P. & Kuurne, T. 1997. Three Dimensional Imaging and Quantitative Analysis of Intracranial Tumors using a Semiautomatic Segmentation Method. In: Goh, JCH. & Nather, A. (eds). Proceedings of the Ninth International Conference on Biomedical Engineering, December 3-6 1997, Singapore. p. 509-510.
48. Dastidar, P., **Heinonen, T.**, Virta, T., Ryymin, P. & Kuurne, T. 1997. Evaluation of Operative Treatment of Intracerebral Hematomas by Semiautomatic Segmentation Method. In: Goh, JCH. & Nather, A. (eds). Proceedings of the Ninth International Conference on Biomedical Engineering. December 3-6 1997, Singapore. p. 733.
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50. Dastidar, P., **Heinonen, T.**, Numminen, J., Rautiainen, M., Ryymin, P. & Eskola, H. 1997. Segmentation of Nasal Cavity Air-Spaces in the Evaluation of Chronic Nasal Airway Obstruction. In: Goh, JCH. & Nather, A. (eds). Proceedings of the Ninth International Conference on Biomedical Engineering, December 3-6, 1997 Singapore. p. 583-584.
51. **Heinonen T**, Dastidar P, Lahtinen A, Eskola H, Malmivuo J, Eskola H. 1998. Implementation of neurologist's workstation software. 4<sup>th</sup> Congress of Nordic Society for Research in Brain Aging, NORAGE 1998, Finland, p. 78.
52. Dastidar, P., Vahvelainen, T., **Heinonen, T.**, Ryymin P., Peltola, J. & Elovaara I. 1996. Correlation between brain lesion load and cognitive defects in patients with multiple sclerosis. Neuroscience 1996 Finland, 29.-30. July, 1996, Tampere, Finland. Tampere. University of Tampere, Medical School. p. 58.
53. Dastidar, P., Ryymin, P., **Heinonen, T.**, Peltola, J. & Elovaara, I. 1996. Semiautomatic MRI segmentation method for volume estimation of multiple sclerosis plaques. Neuroscience 1996, 29.-30. July, Tampere, Finland. Tampere. University of Tampere, Medical School. p. 38.
54. Eskola H, **Heinonen T**, Manninen M, Laarne P, Ragnar P. 2000. EEG Meets MRI, Proceedings of the 54<sup>th</sup> Nordic Radiological Congress, Helsinki, Finland, p. 78.
55. Eskola, H., Malmivuo, J., Laarne, P., **Heinonen, T.**, Lahtinen, A., Ryymin, P. & Keränen, T. 1997. A multimodal study protocol for epileptic patients. In: Abstracts of ISBET<sup>97</sup> Zurich, the 8th World Congress of the International Society for Brain Electromagnetic Topography, Zurich, Switzerland, March 6-8, 1997. p. 50.
56. Hyttinen, J., Kauppinen, P., **Heinonen, T.**, Laarne, P., Eskola, H. & Malmivuo, J. 1996. Application of the visual human man data for modelling of the human thorax as a volume conductor. From the Cell to the Body Surface. 37<sup>th</sup> International Symposium on Vectorcardiography. XXIII<sup>rd</sup> International Congress on Electrocardiology, July 31-August 4, 1996, Cleveland, Ohio, USA. Ohio, USA. University Hospitals of Cleveland. p. 53.
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59. Kulkas T, Dastidar P, **Heinonen T**, Frey H. 1998. Semiautomatic segmentation in volumetric estimation of MR images for the diagnosis of suspected vascular dementias. 4<sup>th</sup> Congress of Nordic Society for Research in Brain Aging, NORAGE 1998, Finland, p. 85.
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63. Saarinen, T., Dastidar, P., Peltola, R., Järvenpää, R., Pertovaara, H., Arola, T., **Heinonen, T.**, Hyttinen, J., Kellokumpu-Lehtinen, P. & Soimakallio, S. Evaluation of the treatment outcome of lymphoma patients after the first treatment using magnetic resonance imaging based volumetry, IFMBE Proceedings. 3<sup>rd</sup> European Medical & Biological Engineering Conference, EMBEC'05. Prague, Czech Republic, 20.-25.11.2005, vol 11, num 1, 2005. 4 pages.
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65. Cervinka, T., Provaznik, I., Hyttinen, J., **Heinonen, T.** & Dastidar, P. Pre-processing computer tomography images for segmentation based on region growing methods. In: Kneppo, P. & Hozman, J. (eds.) IFMBE Proceedings. 3<sup>rd</sup> European Medical & Biological Engineering Conference, EMBEC'05. Prague, Czech Republic, 20.-25.11.2005, vol 11, num 1, 2005, 5 pages.

#### **Research Reports**

66. **Heinonen, T.** & Eskola, H. 1995. Reconstruction of Three-Dimensional Surface of the Brain Using Triangular Facet Surface and Heuristic Methods. Tampere University of Technology, Ragnar Granit Institute, Report. 9. Tampere. 4, 17 p.

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#### ***International Journals***

69. **Heinonen T, Eskola H (special editors), Malmivuo J (editor-in-chief).** 1999. *International Journal of Bioelectromagnetism*, volume 1, number 1, 111 pages. ISSN 1457-7857.

#### ***Lecture Material***

70. **Heinonen T.,** 1997. Exercises for Medical Informatics Course, Tampere University of Technology, 10 pages.
71. **Heinonen T.,** 1999. 3D Image Processing, Edutech/Instrumentarium Imaging; Image Processing 16-17.2.1999, 32 p.
72. **Heinonen T.,** 2000. Lecture Material for the Course: Processing of Medical Images, Tampere University of Technology, 300 pages.
73. **Heinonen T.,** 2001. Exercises for Processing of Medical Images, Lecture Material, Tampere University of Technology, 20 pages.
74. **Heinonen T.,** 2003. Model Answers for the Exercises of Processing of Medical Images, Lecture Material, Tampere University of Technology, 24 pages.
75. **Heinonen T.,** 2002. Lecture Material for the Course: Short Range Radio Systems and Bluetooth, Tampere Polytechnics, 150 pages.
76. **Heinonen T.,** 2003. Lecture Material for the Course: Introduction to Telemedicine / Bluetooth, Tampere University of Technology, 23 pages.

#### ***Other Publications***

77. **Heinonen T.,** 2000. Lääketieteellisten kuvien digitaalisuus diagnosoinnissa, *Acta News*, 2/2000, p. 3.