SHORT CURRICULUM VITAE

John Pertti Koivukangas

Born 1951 in Parkano, Finland
Citizenship: United States, Finland
Spouse: Pirjo (Professor of Health Economics, University of Oulu 1998-2001, CEO Onesys Oy 2001-2009)
Children: four

Main positions

Professor and Chair, Department of Neurosurgery, University of Oulu 1994-2014
Chief Physician, Department of Neurosurgery, Oulu University Hospital 1994-2010
Chairman of the Board, Onesys Oy 1991-present
Creative Director, Birkmann Clinic Oy, 2010 to present
CEO, Onesys Oy 2014 to present

Education

High School Baccalaureate Diploma, Cokato High School, Cokato, MN, USA May 1969
Bachelor of Arts, University of Minnesota, Minneapolis, MN, USA December 1978
Licentiate of Medicine, University of Oulu, Oulu, Finland April 1978
Licensed Physician, Health Ministry, Helsinki, Finland April 1978
Doctor of Medical Science (Ph.D. equiv.), University of Oulu March 1984
Specialist in Neurosurgery, Health Ministry, Helsinki (Professor Stig Nyström) July 1984
Docent in Neurosurgery (Adjunct Professor), University of Oulu May 1987
ECFMG (Educational Commission for Foreign Medical Graduates) Certification January 1980
Voluntary Fellow, Department of Neurosurgery, Minneapolis MN (Professor Shelley N. Chou) 1979, 1982

Other Professional Appointments

Visiting Assistant Professor, Departments of Neurosurgery, University of Minnesota, Minneapolis MN (Professor Shelley N. Chou) and Mayo Clinic, Rochester MN (Professor P.J. Kelly), total 5 months 1985-91
Senior Research Fellow (Varttunut tieteenharjoittaja), Academy of Finland, 12 months 1990-91
Visiting Professor of Neurosurgery, Department of Neurosurgery, University of Minnesota, Minneapolis MN 12 months 1992-93
Director, Center for Wellness Technology, Oulu, Finland, 14 months 1996-97
Visiting Professor of Neurosurgery, Department of Neurosurgery, University of Minnesota, Minneapolis MN 12 months each time, 1999-2000 and 2003-4
Professor of Neurosurgery, Department of Neurosurgery, University of Minnesota, Minneapolis MN 14 months 2007-8
Private physician practice at Tutko, Oulun Diakonisslaitos, Lääkärikeskus Sipoonranta, Söder-Lääkärit, Birkmann Clinic, 1978 to present

Major Academic Grants

Academy of Finland and TEKES (Ultrasound studies with Department of Electrical Engineering, University of Oulu) 190 000 USD 1985-87

Academy of Finland (Quality of life studies with Department of Economics, University of Oulu) 140 000 USD 1987-90
Academy of Finland, Advanced Research Fellowship (Computer-aided brain surgery) 1990-91
TEKES Research Grant (Ultrasound studies) 120 000 USD 1988
TEKES Research Grant (Neuronavigator-based brain surgery) 375 000 USD 1989-91
TEKES Development Grant EUREKA for Oulu Neuronavigator System 200 000 USD 1991-93
TEKES Research Grant (Intraoperative MRI) 300 000 USD 1996-98
TEKES Development Grant (Desktop navigator) 200 000 USD 2004-6
University of Minnesota (MRI compatible surgical table) 40 000 USD 2007-9

Selected other activities

Reviewer (Neurosurgery): Journal of Neurology, Neurosurgery and Psychiatry (UK); Neurosurgery (USA), Acta Neurochirurgica (Europe)
Finnish Neurosurgical Society, President 1996-99
Scandinavian Neurosurgical Society, President 2006-9
UEMS, Section on Neurosurgery, National representative 2005-2009
Professorship referee: University of Minnesota 1993, 1994, 1998
Docent referee: University of Helsinki 1995, University of Tampere 1998
Ph.D. thesis opponent: University of Helsinki 1998, University of Trondheim, University of Linköping, University of Oulu 2003
Professional assessments: Qualified and competent for post of Professor of Neurosurgery, University of Oulu 1991, Karolinska Institute, Stockholm 1997
Board member, Faculty of Medicine, University of Oulu 2000-2003
Board member, Oulun lääketieteellinen tutkimussäätiö (Oulu Medical Research Foundation) 1994-2018
Permanent official expert in neurosurgery, Finnish National Board of Medicolegal Affairs, Helsinki 1995-2009
Charter Chairman, Biomedical Engineering Program, University of Oulu 1994-97
Hands-on demonstration of new techniques in brain surgery: Bilbao, Spain 1988 (laser), University of Minnesota Hospitals, Department of Neurosurgery, Minneapolis MN 1992-93 (Oulu Neuronavigator System), Linköping Sweden and Frankfurt Germany 1995 (Oulu Neuronavigator System), Tampere (intraoperative ultrasound)
Invited international presentations and lectures (available on request)
Pedagogical activity, medical school students, neurosurgical residents (available on request)

SCIENTIFIC WORKS AND LIST OF PUBLICATIONS

Selected early publications and works to demonstrate main themes of research flow, full List of Publications upon request:

I Development and application of ultrasound imaging methods to neurosurgery, especially tumor surgery

1. Koivukangas J (1984) Ultrasound imaging in operative neurosurgery: An experimental and clinical study with special reference to ultrasound holographic B (UHB) imaging. Doctoral dissertation. Acta Universitatis Ouluensis D 115. Oulu University Printing Center.

2. Koivukangas J, J Ylitalo, E Alasaarela, A Tauriainen (1986) Three-dimensional ultrasound imaging of brain for neurosurgery. Ann Clin Res 18 (Suppl 47) 65- 72.

3. Alasaarela E and J Koivukangas (1987) The UHB-Project 1985-87: Technical and Medical Report. University of Oulu. Internal paper, University of Oulu. and Koivukangas J (1993) Report to the University of Minnesota on clinical application of Oulu Neuronavigator System in Minneapolis 1992-93. Internal paper 1993, Universities of Minnesota and Oulu. These two papers outline in practice the nature of my multidisciplinary approach to neurosurgical problems.

4. Koivukangas J, O Tervonen, E Alasaarela, J Ylitalo, S Nyström (1989) Completely computer- focused ultrasound imaging: First clinical imaging results. J Ultrasound Med 8: 232-235.

5. Ylitalo J, J Koivukangas, J Oksman (1990) Ultrasonic reflection mode computed tomography through a skullbone. IEEE Trans. Biomedical Engineering 37: 1059-1066.

6. Alasaarela E, J Koivukangas (1990) Evaluation of image quality of ultrasound scanners in medical diagnosis. J Ultrasound Med 9: 23-34.

II Application of ultrasound imaging methods developed above, with CT correlations, to spinal diseases

7. Tervonen O, J Koivukangas, S Nyström (1988) Ultrasound velocity and attenuation studies in human intervertebral disc. Neuro-Orthopedics 5: 67-73.

8. Ilkko E, S Lähde, J Koivukangas, P Jalovaara (1988) Computed tomography after lumbar disc surgery. Acta Radiologica 29: 179-182.

9. Koivukangas J, O Tervonen (1989) Intraoperative ultrasound imaging in the management of herniated lumbar disc. Acta Neurochir 98: 47-54.

10. Tervonen O, J Koivukangas (1989) Transabdominal ultrasound measurement of the lumbar spinal canal: Its value for evaluation of lumbar spinal stenosis. Spine 14: 232-235.

III From surgical application of ultrasound imaging to open stereotactic systems

11. Koivukangas J, P Kelly (1986) Application of ultrasound imaging to stereotactic brain tumor surgery. Ann Clin Res 18 (Suppl 47): 25-32.

12. Koivukangas J, Y Louhisalmi (1990) Computer-guided laser for neurosurgery. Ann Chir Gynaecol 79: 192-196.

13. Koivukangas J (1993) Development of ultrasound guided brain tumour surgery. In: Thomas DGT (ed) Image-directed Surgery of Brain Tumours. London: Churchill Livingstone.

IV From open stereotaxy to neuronavigation

14. Koivukangas J, Y Louhisalmi, J Alakuijala, J Oikarinen (1993) Ultrasound-controlled neuronavigator-guided brain surgery. J Neurosurg 79: 36-42.

15. Koivukangas J, Y Louhisalmi, J Alakuijala, J Oikarinen (1993) Neuronavigator-guided cerebral biopsy. Acta Neurochir 58: 71-74.

16. Koivukangas J (1993) Low-grade gliomas. In: Thomas DGT and DI Graham(eds) Malignant Brain Tumours. London: Springer-Verlag.

17. Oikarinen J, J Alakuijala, Y Louhisalmi, S Sallinen, H Helminen, J Koivukangas (1993) The Oulu Neuronavigator System: Intraoperative ultrasonography in the verification of neurosurgical localization and visualization. In: Maciunas RJ (ed) Interactive Image-guided Neurosurgery. Neurosurgical Topics Series. American Association of Neurological Surgeons AANS (USA).

V From neuronavigation to intraoperative MRI

18. Vahala E, M Ylihautala, J Tuominen, H Schiffbauer, J Katisko, S Yrjänä, T Vaara, G Enholm, J Koivukangas (2001) Registration in interventional procedures with optical navigator. J Magnetic Resonance Imaging 13: 93-98.

19. Yrjänä S, J Katisko, R Ojala, O Tervonen, H Schiffbauer, J Koivukangas (2002) Versatile intraoperative MRI in neurosurgery and radiology. Acta Neurochir 144: 271-278.

20. Tuominen J, S Yrjänä, J Katisko, J Heikkilä, J Koivukangas (2002) Intraoperative imaging in a comprehensive neuronavigation environment for minimally invasive brain tumour surgery. Acta Neurochir 85 Suppl: 115-120.

VI Quality of life studies and technological assessment

21. Koivukangas J, P Koivukangas (1986) Treatment of low-grade cerebral astrocytoma: New methods and evaluation of results. Ann Clin Res 18 (Suppl 47): 115-124.

22. Koivukangas P, J Koivukangas (1988) Role of quality of life in therapeutic strategies in brain tumors. Health Policy 10: 241-257.

23. Nottingham Health Profile (Great Britain): Questionnaire, Handbook and two articles. Cultural adaptation and validation for Finnish population, with special reference to assessment of brain tumor surgery. This work includes the questionnaire and handbook (Koivukangas P, A Ohinmaa, J Koivukangas (1995) Nottingham Health Profilen (NHP) suomalainen versio. The manual of the Finnish version of the NHP with English summary. Helsinki: Stakes Raportteja 187) as well as reports on general population and brain tumor series results: a. Koivukangas P, J Koivukangas, A Ohinmaa, SL Kivelä, K Krause (1992) NHP: A measure of experienced health state for studies of the evaluation of health care, with English summary Sosiaalilääk Aikakausl 29: 229-235. b. Ohinmaa A, A Niemelä, P Koivukangas, J Koivukangas (1993) The

measurement of health-related quality of life in brain tumor patients, with English summary. Ibid. 30: 203-210.
23. Karinen P, P Koivukangas, A Ohinmaa, J Koivukangas, J Öhman (1999) Cost-effectiveness analysis of nimodipine treatment after aneurysmal subarachnoid hemorrhage and surgery. Neurosurgery. 45: 780-785.

25. Salo J, A Niemelä, M Joukamaa, J Koivukangas (2002) Effect of brain tumour laterality on patients´ perceived quality of life. J Neurol Neurosurg Psychiatry 72: 373-377.

26. Mainio A, H Hakko, A Niemelä, T Tuurinkoski, J Koivukangas, P Räsänen (2003) Effect of brain tumour laterality on anxiety levels among neurosurgical patients. J Neurol Neurosurg Psychiatry 74: 1278-1282.

More recent original publications starting with latest.

Salovaara N, S Yrjänä, H Tuominen, A Karttunen, R Heljasvaara, T Pihlajaniemi, E Heikkinen, J Koivukangas (2013) Expression of VEGF and collagen XVIII in meningiomas: Correlations with histopathological and MRI characteristics. Acta Neurochir (Wien) 155: 989-96.

Löppönen P, S Tetri, S Juvela, J Huhtakangas, P Saloheimo, MK Bode, J Koivukangas, M Hillbom (2013) A population based study of outcomes after evacuation of primary supratentorial intracerebral hemorrhage. Clin Neurol Neurosurg 115: 1350-5,

Koivukangas T, J Katisko, J Koivukangas (2013) Technical accuracy assessment of optical and the electromagnetic tracking systems. SpringerPlus, 2:90.

Koivukangas T, J Katisko, J Koivukangas (2013) Detection of the Spatial Accuracy of an O-Arm in the Region of Surgical Interest. Medical Imaging 2013: Image-guided procedures, Robotic interventions and modeling, February 2013, Orlando FL, USA. David R. Holmes III, Ziv R. Yaniv (ed), 8671, SPIE International Society for Optical Engineering (2013), 8671-81.

Raappana A, T Pirilä, T Ebeling, P Salmela, H Sintonen, J Koivukangas (2012) Long-Term Health-Related Quality of Life of Surgically Treated Pituitary Adenoma Patients: A Descriptive Study. ISRN Endocrinol 675310. Published online 2012

Mainio A, H Hakko, J Koivukangas J, P Räsänen (2011) Depression in relation to anxiety, obsessionality and phobia among neurosurgical patients with a primary brain tumor: A 1-year follow-up study. Clin Neurol Neurosurg 113(8):5 PMID 21664761

Niemelä A, J Koivukangas, R Herva, H Hakko, P Räsänen (2011) Gender difference in quality of life among brain tumor survivors. J Neurol Neurophysiol 2:118. doi:10.4172/2155-9562.1000118

Koivukangas T, J Katisko, J Koivukangas (2011) Technical accuracy of an O-Arm registered surgical navigator. Proceedings of the 33rd Annual International Conference of the IEEE EMBS, Boston, USA: 2148-2151.

Raappana A, J Koivukangas, T Ebeling, T Pirilä (2010) Incidence of pituitary adenomas in Northern Finland in 1992-2007. J Clin Endocrinol Metab 95:4268-75.

Koivukangas T, J Katisko, K Nevala, Y Louhisalmi, J Koivukangas (2009) Development of an accuracy assessment phantom for surgical navigators. J. Conf Proc IEEE Eng Med Biol Soc. 1:1517-20.

Mainio A, H Hakko, A Niemelä, J Koivukangas, P Räsänen (2009) Somatization symptoms are related to right-hemispheric primary brain tumor: a population-based prospective study of tumor patients in northern Finland. Psychosomatics 50(4): 331-5.

Hakko H, P Räsänen, A Niemelä, J Koivukangas, A Mainio (2009) Season of tumor surgery in relation to deaths among brain tumor patients: does sunlight and month of surgery play a role in brain tumor deaths? Acta Neurochir (Wien) 151(11):1369-75.

Mattila S, H Tuominen, J Koivukangas, F Stenbäck (2009) The terminal prostaglandin synthases mPGES-1, mPGES-2, and cPGES are all overexpressed in human gliomas. Neuropathology 29(2):156-65.

Raappana A, J Koivukangas, T Pirilä (2008) 3D modeling-based surgical planning in transsphenoidal pituitary surgery--preliminary results. Acta Otolaryngol 128(9):1011-8.

Juffer AH, U Marin, O Niemitalo, J Koivukangas (2008) Computer modeling of brain tumor growth. Mini Rev Med Chem 8(14):1494-506.

Yrjänä SK, T Vaara , A Karttunen, J Koivukangas (2008) Pulse repetition time and contrast enhancement: simulation study of Gd-BOPTA and conventional contrast agent at different field strengths. Invest Radiol 43(4): 267-75.

Yrjänä SK, J Tuominen, J Koivukangas (2007) Intraoperative magnetic resonance imaging in neurosurgery. Acta Radiol 48(5):540-9.

Katisko JP, JP Koivukangas (2007) Optically neuronavigated ultrasonography in an intraoperative magnetic resonance imaging environment. Neurosurgery 60(4 Suppl 2): 373-80; discussion 380-1.

Yrjänä SK, H Tuominen, A Karttunen, N Lähdesluoma, E Heikkinen, J Koivukangas (2006) Low-field MR imaging of meningiomas including dynamic contrast enhancement study: evaluation of surgical and histopathologic characteristics. AJNR Am J Neuroradiol 27(10): 2128-34.

Mainio A, S Tuunanen, H Hakko, A Niemelä, J Koivukangas, P Räsänen (2006) Decreased quality of life and depression as predictors for shorter survival among patients with low-grade gliomas: a follow-up from 1990 to 2003. Eur Arch Psychiatry Clin Neurosci 256(8): 516-21.

Mainio A, H Hakko, J Koivukangas, A Niemelä, P Räsänen (2006) Winter birth in association with a risk of brain tumor among a Finnish patient population. Neuroepidemiology 27(2): 57-60.

Katisko JP, SK Yrjänä, J Tuominen, S-M Kokkonen, E Ilkko, J Erkkilä, H Shiffbauer, JP Koivukangas (2006) Cerebral edema attenuated inversion recovery MR sequence in low magnetic field: a feasibility study. Acad Radiol 13(2):219-28.

Mainio A, H Hakko, A Niemelä, J Koivukangas, P Räsänen (2006) Gender difference in relation to depression and quality of life among patients with a primary brain tumor. Eur Psychiatry 21(3): 194-9.

Mainio A, H Hakko, A Niemelä, J Koivukangas, P Räsänen (2005)Depression and functional outcome in patients with brain tumors: a population-based 1-year follow-up study. J Neurosurg 103(5):841-7.

Mainio A, H Hakko, A Niemelä, J Koivukangas, P Räsänen (2005) Level of obsessionality among neurosurgical patients with a primary brain tumor. J Neuropsychiatry Clin Neurosci 17(3): 399-404.

Kokkonen S-M, V Kiviniemi, M Mäkiranta, S Yrjänä, J Koivukangas, O Tervonen (2005) Effect of brain surgery on auditory and motor cortex activation: a preliminary functional magnetic resonance imaging study. Neurosurgery 57(2): 249-56; discussion 249-56.

Mainio A, H Hakko, M Timonen, A Niemelä, J Koivukangas, P Räsänen (2005) Depression in relation to survival among neurosurgical patients with a primary brain tumor: a 5-year follow-up study. Neurosurgery 56(6): 1234-41; discussion 1241-2.

Erola T, P Karinen, E Heikkinen, J Tuominen, T Haapaniemi, J Koivukangas, V Myllylä (2005) Bilateral subthalamic nucleus stimulation improves health-related quality of life in Parkinsonian patients. Parkinsonism Relat Disord 11(2): 89-94.

Yrjänä SK, T Vaara, A Karttunen, J Katisko, J Koivukangas (2004) Dynamic MR imaging of brain tumors in low field using undersampled projection reconstruction. Magn Reson Imaging 22(6): 799-805.

Mainio A, H Hakko, A Niemelä, T Tuurinkoski, J Koivukangas, P Räsänen (2003) The effect of brain tumour laterality on anxiety levels among neurosurgical patients. J Neurol Neurosurg Psychiatry 74(9): 1278-82.

Tuominen J, SK Yrjänä , JP Katisko, J Heikkilä, J Koivukangas (2003) Intraoperative imaging in a comprehensive neuronavigation environment for minimally invasive brain tumour surgery. Acta Neurochir Suppl 85: 115-20.

Yrjänä SK, JP Katisko, RO Ojala, O Tervonen, H Schiffbauer, J Koivukangas (2002) Versatile intraoperative MRI in neurosurgery and radiology. Acta Neurochir (Wien) 144(3): 271-8; discussion 278.

Salo J, A Niemelä, M Joukamaa, J Koivukangas (2002) Effect of brain tumour laterality on patients' perceived quality of life. J Neurol Neurosurg Psychiatry 72(3): 373-7.

Reis RM, R Herva, S Brandner, J Koivukangas, N Mironov, W Bär, P Kleihues, H Ohgaki (2001) Second primary glioblastoma. J Neuropathol Exp Neurol 60(2): 208-15.

Vahala E, M Ylihautala, J Tuominen, H Schiffbauer, J Katisko, S Yrjänä, T Vaara, G Ehnholm, J Koivukangas (2001) Registration in interventional procedures with optical navigator. J Magn Reson Imaging 13(1): 93-8.

Katisko J, S Yrjänä, M Lappalainen, T Leppänen, J Koivukangas (1999) [Use of intraoperative magnetic resonance imaging in neurosurgery] Duodecim 115(9): 1021-8. Finnish. No abstract available.

Koivukangas J (1999) Decade of the brain and neurosurgery. Clinical review Recent Advances. Neurosurgery. BMJ 318:35

Main book chapters:

Alasaarela E, K Tervola, J Ylitalo, J Koivukangas (1982) UHB Imaging. In: E A Ash and C R Hill (ed) Acoustic Imaging. Boston: Springer-Verlag

Oikarinen J, J Alakuijala, Y Louhisalmi, S Sallinen, H Helminen, J Koivukangas (1993) The Oulu Neuronavigator System: Intraoperative Ultrasonography in the Verification of Neurosurgical Localization and Visualization. In: Maciunas RJ (ed) Interactive Image-guided Neurosurgery. Neurosurgical Topics Series. American Association of Neurological Surgeons AANS (USA).

Koivukangas J (1993) Low-grade Gliomas. In: T DGT and DI Graham(ed) Malignant Brain Tumours. London: Springer-Verlag.

Koivukangas J (1993) Development of Ultrasound Guided Brain Tumour Surgery. In: Thomas DGT (ed) Image-directed Surgery of Brain Tumours. London: Churchill Livingstone.

Koivukangas J, S Yrjänä (2010) Low-field Brain Biopsy. In: W A Hall, C Nimsky, C L Truwit (ed). Intraoperative MRI-Guided Neurosurgery. New York: Thieme 2010.

Heikkilä T, S Yrjänä, P Kilpeläinen, J Koivukangas, M Sallinen (2012) An Assistive Surgical MRI Compatible Robot: First Prototype with Field Tests (Chapter 19). In: F Signorelli (ed) Explicative Cases of Controversial Issues in Neurosurgery. INTECH open access, published May 23, 2012 under CC BY 3.0 license. ISBN 978-953-51-0623-4. DOI: 10.5772/29557

Neurosurgical research projects where I have been Principle Investigator or medical lead have led to several academic dissertations in addition to the publications. These theses have been made in the indicated disciplines with specific applications to neurosurgical treatment or its assessment (the doctoral theses can be accessed online through University of Oulu):

1983

E Alasaarela: Ultrasound holographic B (UHB) imaging: A theoretical analysis, computer simulation, and preliminary experiments. Doctoral thesis, electrical engineering.

1984

Koivukangas J (1984) Ultrasound imaging in operative neurosurgery: An experimental and clinical study with special reference to ultrasound holographic B (UHB) imaging. Doctoral dissertation. Acta Universitatis Ouluensis D 115. Oulu University Printing Center.

1987

V Suorsa: Experiments with PZT/PVDF transducer array for ultrasound holographic B-scan imaging. Licentiate thesis, electrical engineering.
Y Louhisalmi: Computer assisted method for laser guidance in stereotactic neurosurgery. Master's thesis, mechanical engineering.
J Ylitalo: Ultrasound tomography. Doctoral thesis, electrical engineering.

1988

Q Zhengdi: Frequence domain compensation principle in acoustic holography and circular array imaging using linear array approach. Doctoral thesis, electrical engineering

O Tervonen: Ultrasound of the lumbar intervertebral disc and spinal canal. Doctoral thesis, radiology

1990
P Koivukangas: Application of the analysis of demand for health to the construction of a MIMIC-disability index: With special reference to the measurement of surgical management of brain tumor patients. Licentiate thesis, economics.

1992
J Oikarinen: Visualization system for neuronavigator. Master's thesis, electrical engineering.
J Alakuijala: System interfaces and control for neurosurgical workstation. Master's thesis, electrical engineering.
Y Louhisalmi: Neurosurgical localization arm. Licentiate thesis, mechanical engineering.
S Sallinen: The transducer system of the neuronavigator. Special report for Biomedical Engineering curriculum, electrical engineering.

1993
P Koivukangas: A two-wave MIMIC model for the construction of a health status index based on the health production function. Doctoral thesis, economics.
A Ohinmaa: QALY's -- Valuation of the EuroQOL-measure in different subgroups of the Finnish population. Licentiate thesis, economics.
H Helminen: Geometric modeling of neuronavigator and intraoperative registration of diagnostic volumetric imaging. Master's thesis, electrical engineering.

1995
X Ying: Digital imaging-based measurements and analyses in quantitative biomedical research at cellular and microvascular levels. Doctoral thesis, biophysics.

1997
A Ohinmaa: Indexing quality health-related quality of life. Doctoral thesis, economics

1998
H Schiffbauer: Neuronavigation in brain tumor surgery: Clinical beta-phase of the Oulu Neuronavigator System. Doctoral thesis, neurosurgery
1999
J Oikarinen: Development of neuronavigation. Doctoral thesis, neurosurgery and computer science
2001
J Alakuijala: Development of neuronavigation. Doctoral thesis, neurosurgery and electrical engineering

2005
S Yrjana: Implementation of 0.23T magnetic resonance scanner to perioperative imaging in neurosurgery. Doctoral thesis, neurosurgery and biophysics
A Mainio: Depressive and anxious symptomatology in relation to a primary brain tumor: Prospective study of neurosurgical patients in Northern Finland. Doctoral thesis, psychiatry and neurosurgery

2006
T Erola: Deep brain stimulation of the subthalamic nucleus in Parkinson’s disease. Doctoral thesis, neurosurgery

2009
S-M Kokkonen: MRI of intracranial tumours in adults: Oedema-attenuated inversion recovery MR sequence in low-field MRI, diffusion-weighted MRI and BOLD fMRI. Doctoral thesis, diagnostic radiology, neurosurgery
S Tetri: Factors affecting outcome after primary intracerebral hemorrhage. Doctoral dissertation, neurology, neurosurgery

2012
J Katisko: Intraoperative imaging guided delineation and localization of regions of surgical interest: feasibility study. Doctoral thesis, neurosurgery, diagnostic radiology
T Koivukangas: Methods for determination of the accuracy of surgical guidance devices: A study in the region of neurosurgical interest, Doctoral thesis, mechanical engineering, neurosurgery

Other personally supervised masters' dissertations involving the development of the neurosurgical service, in the Department of Economics. University of Oulu:
J Kukkonen (1995) Activity-based costing in a neurosurgical clinic
T Pentikäinen (1995) Economic evaluation of health care as a method to control market failure
P Anttila (1996) The cost function of a university hospital and 10 clinics, including neurosurgery
J Kanervo (1996) ABC costing and quality management in a neurosurgical clinic