Curriculum vitae

Name	Johann Hummel
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Date of birth	February 1., 1969
Place of birth	Vienna, Austria
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Employment

2017 -	Associate Professor at Medical University of Vienna - Center for Medical Physics
2014 - 2017	Assistant Professor at Medical University of Vienna - Center for Medical Physics
2012 - 2014	Principal investigator of OeNB project 14525 "Automatic patient positioning in Radio-therapy applying 3D3D registration".
2009 - 2012	Principal investigator of FWF Translational project "An interactive Visualization System for Image guided endoscopic Procedures in Gastroenterology"
2004 -	Medical Physicist at Vienna's Hospital Network
2004 -	Research fellow at Medical University of Vienna
2003 - 2004	Schrödinger research fellow at Stanford University (CA, USA)
2002	Research fellow at Queensland University of Technology (Brisbane, Aus)
2000 - 2002	Teacher for Mathematics and Physics at Bernoulli High School, Vienna
1998 - 1999	Teacher for Mathematics and Physics at Joseph Haydn High School, Vienna
1997	Alternative civilian service at Jewish home for the aged in Vienna

Education

2005 - 2011	PhD student at the Center of Medical Physics and Biomedical Engineering Doctor thesis: "Registration of 2D Ultrasound to 3D Computed Tomography and its clinical Applications.", 29.08.2011
2000 - 2002	PhD student at the Department of Biomedical Engineering and Physics Doctor thesis: "Image Guided Endosonography - Requirements and Development.", 21.06.2002
1998 - 2001	Post Graduate Studies:"Medical Physics", University of Vienna
1999 - 2000	PhD student at the Dep. of High Energy Physics, University Autonoma, Barcelona, grant from the Austrian government
1991 - 1996	Studies of Physics and Mathematics at the University of Vienna Diploma thesis: "The inflationary Universe", Institute of Theoretical Physics, University of Vienna, 16.12.1996.
1987 - 1991	Studies of Technical Engineering at the Technical University of Vienna
1979 - 1987	High School, Vienna, Austria Reifeprüfung: 2.6.1987
1975 - 1979	Primary School, Vienna, Austria

Publications

Journals

Senior and corresponding author

Homolka P, Figl M, Wartak A, Glanzer M, Dnkelmeyer M, Hojreh A, Hummel J: "Design of a head phantom produced on a 3D rapid prototyping printer and comparison with a RANDO and 3M lucite head phantom in eye dosimetry applications.", Phys Med Biol. 2017 Apr 21;62(8):3158-3174.

Hirtl A, Bergmann H, Knusl B, Beyer T, Figl M, Hummel J: "Technical Note: Fully-automated analysis of Jaszczak phantom measurements as part of routine SPECT quality control.", Med Phys. 2017 May;44(5):1638-1645.

Figl M, Homolka P, Osanna-Elliott A, Semturs F, Kaar M, Hummel J: "Conversion factors between human and automatic readouts of CDMAM phantom images of CR mammography systems.", Phys Med Biol. 2016 Sep 21;61(18):N514-N521.

Figl M, Homolka P, Osanna-Elliott A, Semturs F, Kaar M, Hummel J: "Spectrum optimization for computed radiography mammography systems.", Phys Med. 2016 Aug;32(8):1034-9.

Figl M, Semturs F, Kaar M, Hoffmann R, Floor-Westerdijk M, van der Burght R, Homolka P, **J. Hummel**: "On the dose sensitivity of a new CDMAM phantom.", Phys Med Biol. 60(9):N177-85(2015).

R. Hoffmann, M. Kaar, Amon Bathia, Amar Bathia, A. Lampret, W. Birkfellner, **J. Hummel**, and M. Figl:"A navigation system for flexible endoscopes using abdominal 3D ultrasound.", Phys Med Biol. 59(18):5545-58(2014).

M. Kaar, M. Figl, R. Hoffmann, W. Birkfellner, M. Stock, D. Georg, G. Goldner, and **J. Hummel**:"Automatic patient alignment system using 3D ultrasound" , Med Phys. 40(4):041714(2013).

M. Figl, M. Kaar, R. Hoffmann, A. Kratochwil, and **J. Hummel**:"An error analysis perspective for patient alignment systems", Int J Comput Assist Radiol Surg. 8(5):849-56(2013).

M. Figl, F. Semturs, M. Kaar, R. Hoffmann, H. Kaldarar, P. Homolka, G. Mostbeck, B. Scholz, and **J. Hummel**: "Dose sensitivity of three phantoms used for quality assurance in digital mammography", Phys Med Biol 58:N13-N23(2013).

M. Figl, R. Hoffmann, M. Kaar, F. Semturs, N. Brasik, W. Birkfellner, P. Homolka, and **J. Hummel**: "Factors for conversion between human and automatic read-outs of CDMAM images.", Med Phys 38(9):5090-3(2011).

First Author

J. Hummel, M. Figl, M. Bax, H. Bergmann, and W. Birkfellner: "2D/3D registration of endoscopic ultrasound to CT volume data.", Phys Med Biol 53:4303-4316 (2008).
J. Hummel, M. Figl, W. Birkfellner M. Bax, C. Maurer Jun. R. Shahidi, and H. Bergmann: "Evaluation of a new electromagnetic tracking system using a standardized assessment protocol.", Phys Med Biol 51:N205-N210 (2006).
J. Hummel, C. Maurer Jun., M. Figl, M. Bax, Y. Kang, R. Shahidi, W. Birkfellner, and H. Bergmann: "Design and evaluation examples for a standardized assessment for Electromagnetic Tracking Systems.", Med Phys 34(7):2371-79 (2005).
J. Hummel, M. Figl, W. Birkfellner, M. Haefner,C. Kollmann, and H. Bergmann: "Evaluation of a miniature electromagnetic position tracker.", Med Phys 29(10):2205-12 (2002).

Co-Author

L. Maier-Hein, A. Franz, W. Birkfellner, **J. Hummel**, I. Gergel, I. Wegner, and H. Meinzer:"Standardized assessment of new electromagnetic field generators in an interventional radiology setting.", Med Phys 39(6):3424-34(2012).
A. Franz, K. März, **J. Hummel**, W. Birkfellner, R. Bendl, S. Delorme, H. Schlemmer, H. Meinzer, and L. Maier-Hein:"Electromagnetic tracking for US-guided interventions: standardized assessment of a new compact field generator.", Int J Comput Assist Radiol Surg. (2012).
M. Figl , C. Bloch, C. Gendrin, C. Weber, S. Pawiro, **J. Hummel**, P. Markelj, F. Pernus, H. Bergmann, and W. Birkfellner: "Efficient implementation of the rank correlation merit function for 2D/3D registration.", Phys Med Biol 55(19):N465-71(2010).
W. Birkfellner, M. Stock, M. Figl, C. Gendrin, **J. Hummel**, S. Dong, J. Kettenbach, D. Georg, and H. Bergmann: "Stochastic rank correlation: a robust merit function for 2D/3D registration of image data obtained at different energies.", Med Phys 36(8):3420-8(2009).
L. Frühwald, J. Kettenbach, M. Figl, **J. Hummel**, H. Bergmann, and W. Birkfellner: "A comparative study on manual and automatic slice-to-volume registration of CT images.", Eur Radiol 19(11):2647-53(2009).
M. Figl, C. Ede, **J. Hummel**, F. Wanschitz, R. Ewers, H. Bergmann, and W. Birkfellner: "A fully automated calibration method for an

optical see-through head-mounted operating microscope with variable zoom and focus.", IEEE Trans Med Imaging 24(11):1492-9 (2005).
W. Birkfellner, R. Seemann, M. Figl, **J. Hummel**, C. Ede, P. Homolka, X. Yang, P. Niederer, and H. Bergmann: "Wobbled splatting a fast perspective volume rendering method for simulation of x-ray images from CT.", Phys Med Biol 50(2):N73-N84 (2005).
W. Birkfellner, M. Figl, C. Matula, **J. Hummel**, R. Hanel,H. Imhof,F. Wanschitz, A. Wagner,F. Watzinger,H. Bergmann: "Computer-enhanced stereoscopic vision in a head-mounted operating binocular.", Phys Med Biol 48(3):N49-57 (2003).
W. Birkfellner, M. Figl, K. Huber, F. Watzinger, F. Wanschitz, **J. Hummel**, R. Hanel, W. Greimel, P. Homolka, R. Ewers and H. Bergmann: "A Head Mounted Operating Microscope for Augmented Reality Visualization in Medicine - Design and Calibration.", IEEE Trans Med Imaging21(8):991-997 (2002).

Proceedings - Senior and first author

M. Kaar, A. Kratochwil, M. Figl, R. Hoffmann, A.Bhatia, W. Birkfellner, and **J. Hummel**: "Automatic patient alignment for prostate radiation applying 3D ultrasound.", Proceedings of SPIE Medical Imaging 8316:83161Q-20(2012).
J. Hummel, M. Kaar, R. Hoffmann, H. Kaldarar, F. Semturs, P. Homolka, and M. Figl:"Dose sensitivity of three methods of image quality assessment in digital mammography.", Proceedings of SPIE Medical Imaging 8313:831354-62(2012).
M. Kaar, R. Hoffmann, H. Bergmann, M. Figl, C. Bloch, A. Kratochwil, W. Birkfellner, and **J. Hummel**: "Comparison of two navigation system designs for flexible endoscopes using abdominal 3D ultrasound.", Proceedings of SPIE Medical Imaging 7964:796418-24(2011).
J. Hummel, M. Kaar, R. Hoffmann, F. Semturs, N. Brasik, P. Homolka, and M. Figl: "Factors for conversion between human and automatic read-outs of CDMAM images.", Proceedings of SPIE Medical Imaging 7961:796154-62(2011).
J. Hummel, F. Semturs, S. Menhart, and M. Figl: "Determination of mass attenuation coefficients for threshold contrast evaluation in digital mammography.", Proceedings of SPIE Medical Imaging 7622:762242-8(2010).
R. Hoffmann, M. Figl, M. Kaar, Amon Bhatia, Amar Bhatia, W, Birkfellner, and **J. Hummel**: "Correction of prostate misalign-

ment in radiation therapy using US-CT registration.", Proceedings of SPIE Medical Imaging 7625:76252B-2(2010).
J. Hummel, M. Figl, W. Birkfellner: "Evaluation of dynamic electromagnetic tracking deviation", Proceedings of SPIE Medical Imaging, 7261:726195-B(2009).
J. Hummel, M. Figl, H. Bergmann, and W. Birkfellner: "Motion correction for radiation therapy of the prostate using B-mode Ultrasound", Proceedings of SPIE Medical Imaging, 6509:65092F-7(2007).
J. Hummel, M. Figl, H. Bergmann, and W. Birkfellner: "Endoscopic navigation system using 2D/3D registration", Proceedings of SPIE Medical Imaging, 6141:614114-A(2006).
J. Hummel, C. Maurer Jun., M. Figl, M. Bax, H. Bergmann, W. Birkfellner, and R. Shahidi: "Standardized evaluation method for Electromagnetic Tracking Systems", Proceedings of SPIE Medical Imaging, 5744:236-4(2005).
J. Hummel, M. Figl, W. Birkfellner,M. Haefner,C. Kollmann, and H. Bergmann: "Hybrid tracking system for flexible endoscopes", Proceedings of SPIE Medical Imaging, 5367:388-3(2004).
J. Hummel, M. Figl, W. Birkfellner, C. Ede, R. Seemann, and H. Bergmann: "Navigation System for flexible Endoscopes", Proceedings of SPIE Medical Imaging, 5029:303-10(2003).
J. Hummel, W. Birkfellner, M. Figl, C. Haider, R. Hanel and H. Bergmann: "Laboratory assessment of a miniature electromagnetic tracker", Proceedings of SPIE Medical Imaging, 4681:94-9(2002).