Prof. Dr. Bernhard Kainz

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Areas of expertise

human-in-the-loop computing, machine learning, medical image analysis, GPU accelerated algorithms

Employment history

Professor, Dept. AIBE, Friedrich-Alexander-University Erlangen-Nürnberg, Germany	since 09/2021
Assoc. Prof.++ (UK Reader), Dept. Computing, Imperial College London, UK	since 09/2021
Assoc. Prof. (UK Senior Lecturer), Dept. Computing, Imperial College London, UK	09/2019 – 08/2021
Ass. Prof. (UK Lecturer), Dept. Computing, Imperial College London, UK	10/2015 – 08/2019
Honorary Lecturer, ISBE, King's College London, UK	since 10/2015
Senior Research Fellow, ISBE, King's College London, UK	05/2015 – 10/2015
Marie-Curie Fellow, Department of Computing, Imperial College London, UK	03/2013 – 04/2015
Post-doctoral researcher, ICG, Graz University of Technology, Austria	05/2011 – 02/2013
Research Associate, ICG, Graz University of Technology, Austria	01/2008 – 04/2011
Research Associate, Dept. Urology, Medical University of Innsbruck, Austria	06/2007 – 12/2007
part-time Research Engineer, Test-lab for High-Voltage Engineering, Graz, Austria	06/2006 – 02/2013
part-time Research Engineer, Siemens Healthcare, Graz Austria	2004 – 2007

Education

Ph.D. Graz University of Technology	10/2007 – 05/2011
Dissertation: "Ray-Based Image Generation For Advanced Medical Applications" (Advisor: Prof. Dieter Schmalstieg) (summa cum laude). Viva date: 05/25/2011	
M.Sc. Graz University of Technology (summa cum laude)	10/2005 – 10/2007
Specialization in Biomedical Engineering and Computer Vision/Graphics	
B.Sc. Graz University of Technology	10/2001 – 06/2005
Course: Telematics (Computer Science plus Electrical Engineering)	

Academic achievement summary

- 42 peer reviewed articles in scientific journals
- 72 peer reviewed full papers at leading international conferences
- 17 peer reviewed abstracts international conferences
- 28 popular science contributions
- 3 patents
- 17 grants, $>$ €1.5M (as PI), $>$ €23.2M (total)
- 24 awards, prizes, and honours
- 3 books edited
- full list: https://scholar.google.com/citations?user=Igxq-YEAAAAJ&hl=en&oi=ao
- supervised 10 PhD students and 100+ UG project students

Awards and Prizes

- **2021** Best Paper Award MICCAI MLCN (with Ma et al.)
- **2021** Best Demonstration runner-up MICCAI ASMUS (with ThinkSono Ltd.)
- **2021** IEEE TMI Distinguished Reviewer Award
- **2020** Winner of the MICCAI Medical Out-of-Distribution Analysis Challenge (with Tan et al.)
- **2019** Imperial President's award (team award for BioMedIA with D. Rueckert, B. Glocker, W. Bai)
- **2018** S.M. Perren research award (for Verbruggen et al. 2018, J Biomechanics)
- **2017** Winning team of the Multimodal Brain Tumor Segmentation Challenge (BraTS'17) (Kamnitsas et al.).
- **2017** IEEE PacivicVIS'17 best paper honourable mention award.
- **2017–now** Various student project prices, Google poster competitions, Corporate Partnership Awards.
- **2016** Insight-Award for the most aesthetic Visualization 2016: "Smoky hurricane" led by R. Khlebnikov.
- **2015** Short-listed for the Nurturing Research Talents Marie Skłodowska-Curie actions prize.
- **2014** Best paper honorable mention award EuroGraphics 2014.
- **2013** Short-listed for the OCG Heinz Zemanek Price.
- **2013** *Best poster* honorable mention for IEEE SciVis 2013.
- **2012** VCBM Karl-Heinz-Höhne 3rd award for "Crepuscular Rays for Tumor Accessibility Planning".
- **2012** Short-listed for the GI-dissertation price.
- **2011** *"Forum Technology and Society"* research/dissertation prize, Graz University of Technology.
- **2011** *Ing. F. Schmiedl research prize*, Research price for the best dissertation
- **2011** *Best paper award*, International Symposium on Non-Photorealistic Animation and Rendering.
- **2008** *ACM Honorable Mention*, CGEMS SIGGRAPH Educational Committee.
- **2007** *Award for excellent performance as a student*, Graz University of Technology.

Professional Activities past 5 years

Area Chair/PC member 21-23nd MICCAI 2018–2020	2018 – 2020
Associate Editor IEEE Transactions on Medical Imaging	since 2019
IPC Human-Centric Machine Learning @ NeurIPS	2019
Guest Editor Computers & Graphics, Visual Computing for Biology and Medicine	2019
IPC OAGM/AAPR Medical Image Analysis 2018	2018
General Chair RAMBO Intl. Workshop at MICCAI	2016 – 2018
Senior IPC: International Joint Conference on Artificial Intelligence	2017 – 2020
Paper Chair Visual Computing for Biology and Medicine (EG VCBM)	2017

Current teaching

Computer Graphics ($\sim$60-130 students),	since 2014
Deep Learning ($\sim$180–300 students)	since 2019

Past teaching

Introduction to Computer Architecture ($\sim$160 students)	since 2018
Computer Architecture ($\sim$130 students), Matlab 101, Computing Topics, (lecture and lab), ICL	2015 – 2017
Computer Graphics at Peking University Summer School International ($\sim$40 students)	07.2016
various courses, co-delivered lectures and labs, TUG	2007 – 2013

Funded research projects	MM/YY	funder	total/employer	type	role
Ultromics AI4Health CDT	10/20 – 09/24	Ultromics&UKRI	£150k	Research	PI
iFind techn. accelerator	10/20 – 09/22	Wellcome Trust	£500k	Translation	CoI
Imperial-TUM collaboration	01/20 – 09/24	Imperial-TUM	£177k	Research	PI
AI4Health EP/S011579/1	04/19 – 10/27	UK UKRI	£15M	Training	CoI
joint venture with JKU	10/18 – 10/21	Upper Austria	£200k	Research	PI
Imaging & AI (19923)	12/18 – 11/21	Innovate UK	£10M/1.7M	Research	CoI
EP/S013687/1	04/19 – 03/22	UK EPSRC	£852k/770k	Research	PI
Intel AI DevCloud	08/18 – 08/19	Intel	$20k	Research	PI
Impact acceleration grant	07/18 – 08/19	UK EPSRC	£12k	Translation	PI
EP/N024494/1	09/16 – 08/17	UK EPSRC	£120k	Research	PI
Wellcome/EPSRC (102431)	01/16 – 02/21	Wellcome Trust	£5M/800k	Research	CoI
Nvidia HW donations	03/16 – 06/18	Nvidia	€10k	Equipment	PI
ClinicImppact (610886)	02/14 – 01/15	EU FP7	€3M/400k	Research	Co-Appl.
F.A.U.S.T. - (325661)	05/13 – 04/15	EU FP7	€230k	Fellowship	PI
Schrödinger Scholarship	resigned for $\Uparrow$	Austrian FWF	€150k	Fellowship	PI
GOSMART (600641)	04/13 – 03/16	EU FP7	€4M/600k	Research	Co-Appl.
MVP (P23329)	09/11 – 08/14	FWF	€350k	Research	CoI
FutureLab	01/08	TU-Graz	€30k	Equipment	Co-Appl.
PhD student funding	2015–2023	various	$\sim$£1M	$8\times$studentships	PI

Memberships of professional bodies

Academic Fellow at the Data Science Institute at Imperial College London	since 2017
Austrian Computer Society - OCG	since 2011
Institute of Electrical and Electronics Engineers (IEEE) - Senior Member since 2017	since 2009
Medical Image Computing and Computer Assisted Intervention (MICCAI) Society	since 2008

Selected public engagement activities/developing others

- **2021**: http://ratchet.lucidifai.com/ medical *"AI"* for the general public
- **2018**: Imperial Fringe: Intelligence Redesigned 18/01/2018
- **2017**: http://corticalexplorer.com, medical data visualisation for the general public
- **2015 – 2018**: Imperial Festival, coordinated a team of 4-9; $>$15,000 audience each year; 3 days.
- **since 2013**: six outreach lectures at UK secondary schools and Silver Crest Award preparation.

Consulting and advising

- **since 2020**: Cydar Medical Ltd. (interventional technology) – Scientific Advisor
- **since 2017**: ThinkSONO Ltd./GmbH (diagnostic technology) – Algorithm design
- **2019–2020**: Ultromics Ltd. (diagnostic technology) – Scientific Advisor
- **2014 – 2017**: Exscitec (provider of STEM outreach activities) – Outreach for secondary schools

List of Publications, Dr Bernhard Kainz

In Computer Science peer reviewed full papers at leading, top-ranked conferences are as important and sometimes more selective as journal publications. See e.g., http://bit.ly/2KzvvyZ or http://bit.ly/2ptl1tF for a discussion of this topic.
My research about human centred AI in health care is at the interface of Computer Science, Medical Image Analysis, Machine Learning and Clinical Science. Thus, both, journal and conference publications count equally much, and I have a good record in both categories.
The leading journals in my area are **IEEE Transactions on Medical Imaging (IEEE Trans Med Imag), Elsevier Medial Image Analysis (Med Image Anal)** and from a machine learning perspective **the Journal of Machine Learning Research (JMLR). The leading conference is the international Conference on Medical Image Computing and Computer Assisted Intervention** (MICCAI) and its associated workshops.
Currently, machine learning related research is done at an extremely fast pace. Like in Physics and Maths, preprints, e.g. on **arXiv.org** that have not been fully peer reviewed are important in our field. For example, according to google scholar, two of my most cited papers are preprints that have only been published later as fully peer reviewed journal publications. Interestingly, authors predominantly post works on arXiv that are of high enough quality to likely pass peer-review. Most of these papers are accepted after peer review at a later point.
Publicly available online preprints and source code repositories foster open science and are becoming more and more important in Computer Science especially in Machine Learning related domains; thus, these contributions are listed as well.
Due to my proximity to the healthcare sector and bioengineering domain I also co-author publications in clinical top journals such as The Lancet and bioengineering journals like the Elsevier Journal of Biomechanics (J Biomech).
Besides traditional publication formats, **challenges** (public competitions) are a common way in medical image analysis to benchmark algorithms against each other. Winning one of these competitions is highly prestigious.
There are no strict rules for **author positions** in my area of Computer Science. Significant contribution to the content of the paper is a must for co-authorship. Usually, Ph.D. students are preferred for the first author position and student/post-doctoral contributors follow. Principal investigators share the last author positions, sorted by their institutional supervision relationship to the first author and seniority. I have contributed in all of these roles as evident in the list below.

Peer reviewed journal papers:

1. **Kainz B**, Heinrich MP, Makropoulos A, Oppenheimer J, Mandegaran R, Sankar S, Deane C, Mischkewitz S, Al-Noor F, Rawdin AC, Ruttloff A., Curry N., Non-invasive diagnosis of deep vein thrombosis from ultrasound imaging with machine learning. NPJ Digital Medicine. 2021 Sep 15;4(1):1-8.
2. Budd S, Robinson EC, **Kainz B**. A survey on active learning and human-in-the-loop deep learning for medical image analysis. Medical Image Analysis. 2021 Apr 9:102062.
3. Day TG, **Kainz B,** Hajnal J, Razavi R, Simpson JM. Artificial intelligence, fetal echocardiography, and congenital heart disease. Prenatal Diagnosis. 2021 May;41(6):733-42.
4. Dou Q, So TY, Jiang M, Liu Q, Vardhanabhuti V, Kaissis G, Li Z, Si W, Lee HH, Yu K, Feng Z., **Kainz B.**, Rueckert D., Glocker B., Yu SCH, Heng PA, Federated deep learning for detecting COVID-19 lung abnormalities in CT: a privacy-preserving multinational validation study. NPJ digital medicine. 2021 Mar 29;4(1):1-1.
5. Meng, Q., Matthew, J., Zimmer, V.A., Gomez, A., Lloyd, D.F.A., Rueckert, D., **Kainz, B.**, “Mutual Information-based Disentangled Neural Networks for Classifying Unseen Categories in Different Domains: Application to Fetal Ultrasound Imaging.” **IEEE Transactions on Medical Imaging**. 2020 Nov 3;40(2):722-34.
6. Miolane, N., Guigui, N., Le Brigant, A., Mathe, J., Hou, B., Thanwerdas, Y., Heyder, St., Peltre, O., Koep, N., Zaatiti, H., Hajri, H., Cabanes, Y., Gerald, Th., Chauchat, P., Shewmake, Ch., Brooks, D., Donnat, C., **Kainz, B.**, Pennec, X., "Geomstats: A Python Package for Riemannian Geometry in Machine Learning", Editors: Francis Bach, David Blei, and Bernhard Schölkopf, To appear in **Journal of Machine Learning Research** (JMLR) 2020

7. Jiang, G., **Kainz, B.**, “Deep Radiance Caching: Convolutional Autoencoders Deeper in Ray Tracing”. **Computers & Graphics**. 2020 Oct 7. Volume 94, February 2021, Pages 22-31 **(reproducibility stamp award)**
8. Robinson, R., Valindria, V.V., Bai, W., Oktay, O., **Kainz, B.**, Suzuki, H., Sanghvi, M.M., Aung, N., Paiva, J.M., Zemrak, F., Fung, K., Lukaschuk, E., Lee, A.M., Carapella, V., Kim, Y.J., Piechnik, St.K., Neubauer, St., Petersen, St.E., Page, Ch., Matthews, P.M., Rueckert, D., Glocker, B., “Automated quality control in image segmentation: application to the UK Biobank cardiovascular magnetic resonance imaging study.” **Journal of Cardiovascular Magnetic Resonance**. 2019 Dec 1;21(1):18.
9. Matthew, J., Deprez, M., Uus, A., Holder, M., McCabe, L., Van Poppel, M., Skelton, E., Smith, S., Sankaran, S., Wright, R., Patkee, P.A., **Kainz, B.**, Hajnal, J., Rutherford, M., “Syndromic craniofacial dysmorphic feature assessment in utero: potential for a novel imaging methodology with reconstructed 3D fetal MRI models.” **Ultrasound in Obstetrics & Gynecology**. 2019 Oct;54:29-.
10. Meng, Q., Sinclair, M., Zimmer, V., Hou, B., Rajchl, M., Toussaint, N., Oktay, O., Schlemper, J., Gomez ,A., Housden, J., Matthew, J., Rueckert, D., Schnabel, J., **Kainz, B**., “Weakly supervised estimation of shadow confidence maps in fetal ultrasound imaging.” **IEEE Trans Med Imag.** 2019 Apr 25;38(12):2755-67.
11. Lloyd, D.F.A., Pushparajah, K., Simpson, J.M., Van Amerom, J.F., Van Poppel, M.P., Schulz, A., **Kainz, B.**, Deprez, M., Lohezic, M., Allsop, J., Mathur, S., Bellsham-Revell, H., Vigneswaran, T., Charakida, M., Miller, O., Zidere, V., Sharland, G., Rutherford, M., Hajnal, J.V., Razavi, R., “Three-dimensional visualisation of the fetal heart using prenatal MRI with motion-corrected slice-volume registration: a prospective, single-centre cohort study.” **The Lancet.** 2019 Apr 20;393(10181):1619-27.
12. Schlemper, J., Oktay, O., Schaap, M., Heinrich, M., **Kainz, B.**, Glocker, B., Rueckert, D., “Attention gated networks: Learning to leverage salient regions in medical images.” **Medical image analysis**. 2019 Apr 1;53:197-207.
13. Alansary, A., Oktay, O., Li, Y., Le Folgoc, L., Hou, B., Vaillant, G., Kamnitsas, K., Vlontzos, A., Glocker, B., **Kainz, B.,** Rueckert, D., “Evaluating reinforcement learning agents for anatomical landmark detection.” **Medical image analysis**. 2019 Apr 1;53:156-64.
14. Castro, D.C., Tan, J., **Kainz, B.,** Konukoglu, E., Glocker, B., “Morpho-Mnist: Quantitative assessment and diagnostics for representation learning.” **Journal of Machine Learning Research**. 2019;20(178):1-29.
15. Bai, W., Sinclair, M., Tarroni, G., Oktay, O., Rajchl, M., Vaillant, G., Lee, A.M., Aung, N., Lukaschuk, E., Sanghvi, M. M., Zemrak, F., Fung, K., Paiva, J.M., Carapella, V., Kim, Y.J., Suzuki, H., **Kainz, B.**, Matthews, P.M., Petersen, St. E., Piechnik, St. K., Neubauer, St., Glocker, B., Rueckert, D., “Automated cardiovascular magnetic resonance image analysis with fully convolutional networks”. **Journal of Cardiovascular Magnetic Resonance**. 2018 Dec 1;20(1):65.
16. Oktay, O., Ferrante , E., Kamnitsas , K., Heinrich, M., Bai, W., Caballero, J., Cook, S. A., de Marvao, A., Dawes, T., O’Regan, D. P., **Kainz, B.**, Glocker, B., and Rueckert, D., “Anatomically Constrained Neural Networks (ACNNs): Application to Cardiac Image Enhancement and Segmentation” **IEEE Trans. Med Imag** 37, (2018), 384-395.
17. Lloyd, D. F. A., van Poppel, M., Schultz, A., Pushparajah, K., Simpson, J., van Amerom, J.F.P., **Kainz, B.**, Kuklisova-Murgasova, M., Vigneswaran, T., Charakida, M., Miller, O., Zidere, V., Sharland, G., Rutherford, M., Hajnal, J., and Razavi, R., “Motion corrected fetal cardiac MRI increases diagnostic confidence in clinically” challenging cases, **Heart** 104, (2018), A11–A11
18. Verbruggen, St. W., **Kainz, B.,** Shelmerdine, S. C., Hajnal, J. V., Rutherford, M. A, Arthurs, O. J., Phillips, A. T. M., and Nowlan, N. C., “Stresses and strains on the human fetal skeleton during development”, **J. Royal Soc. Interface** 15(138), (2018), 20170593
19. Verbruggen, S.W., **Kainz, B.**, Shelmerdine, S.C., Arthurs, O.J., Hajnal, J.V., Rutherford, M.A., Phillips, A.T., and Nowlan, N.C., "Altered biomechanical stimulation of the developing hip joint in presence of hip dysplasia risk factors", **J Biomech** 78, (2018), 1 - 9
20. Hou, B., Khanal, B., Alansary, A., McDonagh, St., Davidson, A., Rutherford, M., Hajnal, J. V., Rueckert, D., Glocker, B., and **Kainz, B.**, “3-D Reconstruction in Canonical Co-ordinate Space from Arbitrarily Oriented 2D Images”, **IEEE Trans Med Imag** 37, (2018), 1737-1750
21. Alansary, A., Rajchl, M., McDonagh, S. G., Murgasova, M., Damodaram, M., Lloyd, D. F. A., Davidson, A., Rutherford, M., Hajnal, J. V., Rueckert, D., and **Kainz, B.**, “PVR: Patch-to-

Volume Reconstruction for Large Area Motion Correction of Fetal MRI", **IEEE Trans Med Imag** 36, (2017), 2031-2044
22. Miao, H., Mistelbauer, G., Karimov, A., Alansary, A., Davidson, A., Lloyd, D. F. A., Damodaram, M., Story, L., Hutter, J., Hajnal, J. V., Rutherford, M., Preim, B., **Kainz, B.**, and Gröller, M. E., "Placenta Maps: In Utero Placental Health Assessment of the Human Fetus", **IEEE Trans Vis Comput Grap** 23, (2017),1612-1623
23. Rajchl, M., Lee, M. C. H., Oktay, O., Kamnitsas, K., Passerat-Palmbach, J., Bai, W., Damodaram, M., Rutherford, M. A., Hajnal, J. V., **Kainz, B.**, and Rueckert, D., "DeepCut: Object Segmentation From Bounding Box Annotations Using Convolutional Neural Networks", **IEEE Trans Med Imag** 36, (2017), 674-683
24. Baumgartner, C. F., Kamnitsas, K., Matthew, J., Fletcher, T. P., Smith, S., Koch, L. M., **Kainz, B.**, and Rueckert, D., "SonoNet: Real-Time Detection and Localisation of Fetal Standard Scan Planes in Freehand Ultrasound", **IEEE Trans Med Imag** 36, (2017), 2204-2215
25. Lloyd, D., **Kainz, B.**, van Amerom, J. F., Lohezic, M., Pushparajah, K., Simpson, J. M., Malamateniou, Ch., Hajnal, J. V., Rutherford, M., and Razavi, R., "Prenatal MRI visualisation of the aortic arch and fetal vasculature using motion-corrected slice-to-volume reconstruction", **J Cardiovasc Magn Reson** 18, (2016), 180
26. Rueckert, D., Glocker, B., and **Kainz, B.**, "Learning clinically useful information from images: Past, present and future ", **Med Image Anal** 33, (2016), 13 - 18
27. Egger, J., Busse, H., Brandmaier, P., Seider, D., Gawlitza, M., Strocka, S., Voglreiter, P., Dokter, M., Hofmann, M., **Kainz, B.**, Hann, A., Chen, X., Alhonnoro, T., Pollari, M.; Schmalstieg, D., and Moche, M., "Interactive Volumetry Of Liver Ablation Zones", **Scientific Reports**, 5, (2015), 15373
28. **Kainz, B.,** Steinberger, M., Wein, W., Kuklisova-Murgasova, M., Malamateniou, C., Keraudren, K., Torsney-Weir, T., Rutherford, M., Aljabar, P., Hajnal, J.V., and Rueckert, D., "Fast Volume Reconstruction From Motion Corrupted Stacks of 2D Slices", **IEEE Trans Med Imag** 34, (2015),1901–1913
29. Keraudren, K., Kuklisova-Murgasova, M., Kyriakopoulou, V., Malamateniou, C., Rutherford, M.A., **Kainz, B.**, Hajnal, J.V. and Rueckert, D., 2014. Automated fetal brain segmentation from 2D MRI slices for motion correction. *NeuroImage*, *101*, pp.633-643.
30. Steinberger, M., Kenzel, M., **Kainz, B.**, Wonka, P. and Schmalstieg, D., 2014, May. „On-the-fly generation and rendering of infinite cities on the GPU". In *Computer graphics forum* (Vol. 33, No. 2, pp. 105-114)
31. Steinberger, M., Kenzel, M., **Kainz, B.**, Müller, J., Peter, W. and Schmalstieg, D., 2014, May. „Parallel generation of architecture on the GPU". In *Computer graphics forum* (Vol. 33, No. 2, pp. 73-82)
32. Khlebnikov, R., Voglreiter, P., Steinberger, M., **Kainz, B.,** and Schmalstieg, D., 2014, June. Parallel Irradiance Caching for Interactive Monte-Carlo Direct Volume Rendering. In *Computer graphics forum* (Vol. 33, No. 3, pp. 61-70)
33. Khlebnikov, R., **Kainz, B.**, Steinberger, M. and Schmalstieg, D., 2013. Noise-based volume rendering for the visualization of multivariate volumetric data. *IEEE transactions on visualization and computer graphics*, *19*(12), pp.2926-2935.
34. Khlebnikov, R., **Kainz, B.**, Steinberger, M., Streit, M. and Schmalstieg, D., 2012, June. „Procedural Texture Synthesis for Zoom-Independent Visualization of Multivariate Data". In *Computer graphics forum* (Vol. 31, No. 3pt4, pp. 1355-1364). Oxford, UK: Blackwell Publishing Ltd.
35. Steinberger, M., **Kainz, B.**, Kerbl, B., Hauswiesner, S., Kenzel, M. and Schmalstieg, D., 2012. „Softshell: dynamic scheduling on GPUs". *ACM Transactions on Graphics (TOG)*, *31*(6), p.161.
36. Steinberger, M., **Kainz, B.**, Hauswiesner, S., Khlebnikov, R., Kalkofen, D. and Schmalstieg, D., „Ray prioritization using stylization and visual saliency". *Computers & Graphics*, *36*(6), 2012, 673-684.
37. Khlebnikov, R., **Kainz, B.**, Muehl, J. and Schmalstieg, D., 2011. „Crepuscular rays for tumor accessibility planning". *IEEE Transactions on Visualization & Computer Graphics*, (12), pp.2163-2172.
38. **Kainz, B.**, Grabner, M., Bornik, A., Hauswiesner, S., Muehl, J. and Schmalstieg, D., , December. „Ray casting of multiple volumetric datasets with polyhedral boundaries on manycore GPUs". In *ACM Transactions on Graphics (TOG)* 28, No. 5, (ACM) 2009, 152.
39. Reiter, G., Reiter, U., Kovacs, G., **Kainz, B.**, Schmidt, K., Maier, R., Olschewski, H. and Rienmueller, R., "Magnetic Resonance–Derived 3-Dimensional Blood Flow Patterns in the

Main Pulmonary Artery as a Marker of Pulmonary Hypertension and a Measure of Elevated Mean Pulmonary Arterial Pressure" Circulation: Cardiovascular Imaging. 2008 Jul;1(1):23-30.

40. Skelton, E., Matthew, J., Li, Y., Gupta, Ch., Knight, C., Khanal, B., **Kainz, B.**, Hajnal, J.V., Rutherford, M., "Towards automated extraction of 2D standard fetal head planes from 3D ultrasound acquisitions: A clinical evaluation and quality assessment comparison Radiography." to appear in **Radiography** 2020 https://doi.org/10.1016/j.radi.2020.11.006
41. Koestenbauer, S., Stiegler, P., Stadlbauer, V., Mayrhauser, U., Leber, B., Blattl, D., **Kainz, B.**, Reich, O., Portugaller, R.H., Wiederstein-Grasser, I. and Tschliessnigg, K.H., 2011. Visualization of large-scale sections. *J Surg Radiol*, *2*, pp.170-3.
42. Kainz, B., Reiter, U., Reiter, G. and Schmalstieg, D.,. „In vivo interactive visualization of four-dimensional blood flow patterns". *The visual computer*, *25*(9), 2009, 853-862.

Books edited:

43. Stoyanov, D.; Taylor, Z.; **Kainz, B.**; Maicas, G.; Beichel, R.; Martel, A.; Maier-Hein, L.; Bhatia, K; Vercauteren, T., Oktay, O. T., Carneiro O., Carneiro, G.; Bradley, A. P.; Nascimento, J.; Min, H.; Brown, M. S.; Jacobs, C.; Lassen-Schmidt, B.; Mori, K.; Petersen, J.; Estépar ,R. S. J.; Schmidt-Richberg, A.; Veiga, C. (Eds.), "Image Analysis for Moving Organ, Breast, and Thoracic Images: Third International Workshop, RAMBO 2018, Fourth International Workshop, BIA 2018, and First International Workshop, TIA 2018, Held in Conjunction with MICCAI 2018, Granada, Spain, September 16 and 20, 2018, Proceedings", Lecture Notes in Computer Science (LNCS) 11040, (**Springer International Publishing**) 2018
44. Zuluaga, M. A.; Bhatia, K.; **Kainz, B.**; Moghari, M. H.; Pace, D. F. (Eds.), Reconstruction, Segmentation, and Analysis of Medical Images: First International Workshops, RAMBO 2016 and HVSMR 2016, Held in Conjunction with MICCAI 2016, Athens, Greece, October 17, 2016, Revised Selected Papers, volume LNCS 10129, (**Springer International Publishing**) 2017
45. Cardoso, J., Arbel, T.; Gao, F.; **Kainz, B.;** van Walsum, T.; Shi, K.; Bhatia, K. K.; Peter, R.; Vercauteren, T.; Reyes, M.; Dalca, A.; Wiest, R.; Niessen, W.; Emmer, B. J. (Eds.), Molecular Imaging, Reconstruction and Analysis of Moving Body Organs, and Stroke Imaging and Treatment. Fifth International Workshop, CMMI 2017, Second International Workshop, RAMBO 2017, and First International Workshop, SWITCH 2017, Held in Conjunction with MICCAI 2017, Québec City, QC, Canada, September 14, 2017, Proceedings, volume 10555, (**Springer, Cham**) 2017

Peer reviewed full papers at scientific conferences:

46. Hou B, Kaissis G, Summers RM, **Kainz B.** RATCHET: Medical Transformer for Chest X-ray Diagnosis and Reporting. In International Conference on Medical Image Computing and Computer-Assisted Intervention 2021 Sep 27 (pp. 293-303). Springer, Cham.
47. Reynaud H, Vlontzos A, Hou B, Beqiri A, Leeson P, **Kainz B.** Ultrasound Video Transformers for Cardiac Ejection Fraction Estimation. In International Conference on Medical Image Computing and Computer-Assisted Intervention 2021 Sep 27 (pp. 495-505). Springer, Cham.
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49. Tan J, Hou B, Day T, Simpson J, Rueckert D, **Kainz B**. Detecting Outliers with Poisson Image Interpolation. In International Conference on Medical Image Computing and Computer-Assisted Intervention 2021 Sep 27 (pp. 581-591). Springer, Cham.
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