Summary

Data visualization, imaging and software engineer equally capable in research and in development. Able to analyse hard technical problems and then design, realise and communicate creative and practical solutions, independently or with a team.

Basic Statistics

Name	Charl Pieter Botha
Age	42
Languages	Dutch (Fluent)
	English (Excellent - CEF level C2: 21-03-2007)
	Afrikaans (Native)
Marital Status	Married
E-Mail	info@charlbotha.com
Websites	http://charlbotha.com/
	http://www.linkedin.com/in/cpbotha

Education

1. Doctor (Ph.D). Delft University of Technology, The Netherlands. Thesis: *Techniques and Software Architectures for Medical Visualisation and Image Processing.* September 2005.
2. Master of Science in Engineering (M.Sc.). University of Stellenbosch, South Africa. Thesis: *An On-Line Machine Vision Flotation Froth Analysis Platform.* Cum Laude, December 1999.
3. Bachelor of Engineering (B.Eng.). University of Stellenbosch, South Africa. Thesis: *License Plate Detection and Segmentation.* December 1997.

Other

1. Basiskwalificatie Onderwijs (BKO). 200 hours. Certified for teaching at university level. December 2009.

Books authored

Visual Computing for Medicine, by Bernhard Preim and **Charl Botha**, 2013, Morgan Kaufmann, 836 pages. See http://medvisbook.com/ and http://amzn.com/0124158730. The standard reference in Medical Visualization.

See Books, contributions to books and editorships further down for other book- and thesis-related contributions.

Employment

Feb 2014 - present: Science Officer, Stone Three Venture Technology - https://www.stonethree.com/ - bespoke enterprise software engineering solutions for industry leaders.

Dec 2012 - present: Engineer & Owner, vxlabs - http://vxlabs.com/ - visualization, imaging and software engineering consultancy. (Increasingly data science and machine learning. The more mathematics I eat, the more superpowers I get.)

Nov 2005 - present: Co-founder and engineer, Treparel Information Solutions: company specialising in visualisation and data-mining of large datasets - Website: http://treparel.nl/ - Architected and developed first version of KMX, flagship client-server system for the analysis and visualization of high-dimensional data. Currently working on KMX NG.

May 2011 - present: Co-founder and CxO, TimeScapers. Architected and developed TimeRank, next-generation personalized time management system.

May 2010 - present: Advisor, Clinical Graphics: Company specialised in simulation-based surgical planning systems. Website: http://www.clinicalgraphics.com/ - CEO: Dr. Peter Krekel.

Jan 2006 - April 2013: Assistant Professor (tenured since Jan 2007), Computer Graphics & Visualization section, Dept. of Intelligent Systems, Faculty of EEMCS, Delft University of Technology.
- Head of Medical Visualisation group at the TU Delft. Research lines *1. Surgical planning and guidance* and *2. Visual Analysis of Medical Data*. Cooperate with research groups at the Leiden University Medical Centre (0.2 FTE appointment in the Dept. of Radiology) and the Erasmus Medical Centre in Rotterdam.
- Co-promotor of 7 Ph.D. students, 3 of which have recently defended or will defend within the following months.
- Co-supervised three Ph.D. projects to completion (Blaas 2010, Krekel 2011, Zhao 2011).
- Currently supervising 4 M.Sc. students. Supervised to completion 24 M.Sc. research projects since 2004.
- Designed and teach the master-level Medical Visualisation (IN4307, 5 ECTS) course at the TU Delft.
- Redesigned and teach core master-level general Data Visualisation (IN4086, 6 ECTS) course.
- Designed and coordinate the next generation TU Delft Technische Informatica bachelor orientation project (TI 1100-A), given for the first time to 124 first years in the first week of September 2010, to 130 first years in September of 2011, and to 170+ first years in September of 2012.

Apr 2006 - April 2013: Visiting Scientist, Department of Radiology (LKEB group), Leiden University Medical Centre (LUMC). 1 day / week appointment for the supervision of existing and development of new collaborative research projects..

Oct 2004 - Dec 2005: Post-doctoral researcher, Computer Graphics section, EEMCS Faculty, Delft University of Technology. Worked on BSIK Virtual Laboratory for e-Science project, primarily extending DeVIDE, the Delft Visualization and Image processing Development Environment.

Sep 2000 - Sep 2004: Ph.D. candidate in the Computer Graphics section, EEMCS Faculty, Delft Technical University. This involved full-time research in the field of medical computer graphics and visualisation.

Jan 2000 - Aug 2000: Project Engineer at Stone Three Signal Processing (Pty) Ltd. Designed and developed industrial image processing systems and frameworks, mostly for the mining industry.

May 1999 - April 2000: Project Engineer at Crusader Systems (Pty) Ltd. Developed various machine vision products for industrial application. Windows NT application development, Linux application and driver development, embedded computers. One of the four credited designers of the award-winning FrothMaster embedded computer vision product for the monitoring of the platinum extraction process.

Award: https://www.sabs.co.za/index.php?page=diaw00
FrothMaster: http://www.google.com/search?q=FrothMaster.pdf
Crusader Systems is now known as csense: http://www.csensesystems.com

Technical skills

- Programming in Python, C++, C, Swift, processing, JavaScript, bash, Java, VHDL and x86 assembly.
- Have designed Linux kernel drivers; low-level graphics chip support in XFree86; large high-level software systems (e.g. DeVIDE, also initial design of Treparel KMX, Evalueserve IPDashboard); web-apps using Django, backbone.js, angular and D3.js visualizations; IOS apps in Swift; high performance image processing libraries; graphics and visualisation algorithms; industrial-grade image processing systems and embedded operating systems. See http://cpbotha.net/software for more details.
- Contributions have been accepted into, amongst others, VTK, ITK, the Linux kernel and XFree86.
- Able to analyse complex processes, design the hardware and software systems that integrate with them and document and communicate all steps of the process.

Academic part of CV starts here

The rest of this CV is relevant primarily from an academic standpoint, detailing research grants that I have successfully acquired, research activities and scientific publications. From an industrial point of view, interesting to flip through.

Research Grants

1. *Visual Analysis in Population Imaging Research (VAnPIRe),* **k€ 725**, awarded July 2012 - sub-project of STW programme proposal P11-41 Population Imaging Genetics (ImaGene). Together with Dr. J.R. Milles (LUMC LKEB) and Prof.dr.ir. B.P.F. Lelieveldt.
2. *High-definition Atlas-based surgical planning for Pelvic Surgery,* **k€ 450**, awarded October 2010 - STW NIG. Together with Prof.dr. M.C. DeRuiter (LUMC Anatomy). Co-applicants: Drs. Jansma (LUMC Anatomy), Dr.ir. E.R. Valstar (LUMC Orthopaedics) and Prof.dr. C.J.H. van de Velde (LUMC Surgery).
3. *Novel pre-operative planning and intra-operative guidance system for shoulder replacement surgery*, **k€ 450**, awarded December 2009 - STW NIG. Together with Dr.ir. E.R. Valstar and Prof.dr. R.G.H.H. Nelissen.
4. *Visualisation for Molecular Imaging*, **k€ 200**, awarded September 2007 - TUD EWI. Together with Dr. Ir. Boudewijn Lelieveldt.
5. *Multi-field Medical Visualisation*, **k€ 500**, awarded June 2005 - NWO VIEW. Together with Ir. Frits Post and Dr. Anna Vilanova.
6. *Surface and volume processing for polyp detection in virtual colonoscopy*, **4 year PhD project**, 2004 - 2009, funded by Philips Healthcare. Together with Ir. F.H. Post.

Awards

1. Best paper at SimVis 2008: C.P. Botha and F.H. Post, *Hybrid Scheduling in the DeVIDE Dataflow Visualisation Environment*
2. Best paper at SimVis 2006: P.R. Krekel, C.P. Botha, E.R. Valstar, P.W. de Bruin, P.M. Rozing, and F.H. Post, *Interactive simulation and comparative visualisation of the bone-determined range of motion of the human shoulder*

Publications

My H-Index is currently 19 according to Google Scholar. Please also see my Google Scholar profile https://scholar.google.co.za/citations?user=jM3EG4sAAAAJ&hl=en - it may be more up to date than the list here.

Peer-reviewed articles in international journals

1. T. Kroes, F. H. Post, and **C. P. Botha**, "Exposure Render: An Interactive Photo-Realistic Volume Rendering Framework," *PLoS ONE*, vol. 7, no. 7, p. e38586, Jul. 2012.
2. D. F. Malan, **C. P. Botha**, and E. R. Valstar, "Voxel classification and graph cuts for automated segmentation of pathological periprosthetic hip anatomy," *International Journal of Computer Assisted Radiology and Surgery*, Jan. 2012.
3. D. F. Malan, C. P. Botha, G. Kraaij, R. M. S. Joemai, H. J. L. Heide, R. G. H. H. Nelissen, and E. R. Valstar, "Measuring femoral lesions despite CT metal artefacts: a cadaveric study," Skeletal Radiology, vol. 41, no. 5, pp. 547–555, 2012.
4. C. Godeschalk-Slagboom, R. van der Geest, K. Zeppenfeld, and C. Botha, "Cardiac MRI visualization for ventricular tachycardia ablation," International Journal of Computer Assisted Radiology and Surgery, pp. 1–15, 2012.

5. D. F. Malan, **C. P. Botha**, G. Kraaij, R. M. S. Joemai, H. J. L. Heide, R. G. H. H. Nelissen, and E. R. Valstar, "Measuring femoral lesions despite CT metal artefacts: a cadaveric study," Skeletal Radiology, Jul. 2011.

6. X. Zhang, J. Blaas, **C. Botha**, P. Reischig, A. Bravin, and J. Dik, "Process for the 3D virtual reconstruction of a microcultural heritage artifact obtained by synchrotron radiation CT technology using open source and free software," *Journal of Cultural Heritage*, 2011.

7. F. V. Paulovich, D. M. Eler, J. Poco, **C. P. Botha**, R. Minghim, and L. G. Nonato, "Piecewise Laplacian-based Projection for Interactive Data Exploration and Organization," Computer Graphics Forum, vol. 30, no. 3, pp. 1091-1100, Jun. 2011.

8. K. Sihan, **C. Botha**, F. Post, S. de Winter, N. Gonzalo, E. Regar, P. W. Serruys, R. Hamers, and N. Bruining, "Retrospective image-based gating of intracoronary optical coherence tomography: implications for quantitative analysis," *EuroIntervention: Journal of EuroPCR in Collaboration with the Working Group on Interventional Cardiology of the European Society of Cardiology*, vol. 6, no. 9, pp. 1098-1103, Apr. 2011.

9. S. Busking, **C. P. Botha**, L. Ferrarini, J. Milles, and F. H. Post, "Image-based rendering of intersecting surfaces for dynamic comparative visualization," *The Visual Computer*, vol. 27, pp. 347-363, 2011.

10. S. Busking, **C. P. Botha**, and F. H. Post, "Example-based interactive illustration of multi-field datasets," *Computers & Graphics*, vol. 34, no. 6, pp. 719-728, Dec. 2010. FIF: 0.46.

11. S. Busking, **C.P. Botha**, and F.H. Post, "Dynamic Multi-View Exploration of Shape Spaces," *Computer Graphics Forum*, vol. 29, 2010, pp. 973-982. FIF: 1.60.

12. P. Kok, M. Baiker, E.A. Hendriks, F.H. Post, J. Dijkstra, C.W. Löwik, B.P. Lelieveldt, and **C.P. Botha**, "Articulated Planar Reformation for Change Visualization in Small Animal Imaging," *IEEE Transactions on Visualization and Computer Graphics*, 2010. FIF: 2.03.

13. P.R. Krekel, E.R. Valstar, J. de Groot, F.H. Post, R.G. Nelissen, and **C.P. Botha**, "Visual Analysis of Multi-Joint Kinematic Data," *Computer Graphics Forum*, vol. 29, 2010, pp. 1123-1132. FIF: 1.60.

14. R.A. Lee, A. Van Zundert, **C.P. Botha**, A.L. Lataster, T.C. Van Zundert, W.G. Van Der Ham, and P.A. Wieringa, "The Anatomy of the Thoracic Spinal Canal in Different Postures: An MRI Investigation," *Regional Anesthesia and Pain Medicine*, vol. 35, 2010, pp. 364-369. FIF: 1.03.

15. P.R. Krekel, E.R. Valstar, F.H. Post, P.M. Rozing, and **C.P. Botha**, "Combined Surface and Volume Processing for Fused Joint Segmentation," *The International Journal for Computer Assisted Radiology and Surgery*, vol. 5, 2010, pp. 263-273.

16. J. Blaas, **C.P. Botha**, E. Grundy, M.W. Jones, R.S. Laramee, and F.H. Post, "Smooth graphs for visual exploration of higher order state transitions," *IEEE Transactions on Visualization and Computer Graphics*, vol. 15, 2009. FIF: 2.03.

17. P.R. Krekel, P.W. de Bruin, E.R. Valstar, F.H. Post, P.M. Rozing, and **C.P. Botha**, "Evaluation of Bone Impingement Prediction in Pre-operative Planning for Shoulder Arthroplasty," *Journal of Engineering in Medicine*, 2009. FIF: 0.49.

18. S. Busking, **C.P. Botha**, and F.H. Post, "Direct Visualization of Deformation in Volumes," *Computer Graphics Forum*, vol. 28, 2009, pp. 799-806. FIF: 1.60.

19. K. Sihan, **C. Botha**, F. Post, S. de Winter, N. Gonzalo, E. Regar, P.J. Serruys, R. Hamers, and N. Bruining, "Fully automatic three-dimensional quantitative analysis of intracoronary optical coherence tomography: method and Validation.," *Catheter Cardiovasc Interv*, 2009, pp. 1058-1065. FIF: 0.60.

20. P. Reischig, J. Blaas, **C. Botha**, A. Bravin, L. Porra, C. Nemoz, A. Wallert, and J. Dik, "A note on medieval microfabrication: the visualization of a prayer nut by synchrotron-based computer X-ray tomography," *Journal of Synchrotron Radiation*, vol. 16, 2009, pp. 310-313. FIF: 1.58.
21. J. Blaas, **C.P. Botha**, and F.H. Post, "Extensions of Parallel Coordinates for Interactive Exploration of Large Multi-Timepoint Data Sets," *IEEE Transactions on Visualization and Computer Graphics*, vol. 14, 2008, pp. 1436-1451. FIF: 2.03.
22. S.D. Olabarriaga, J.G. Snel, **C.P. Botha**, and R.G. Belleman, "Integrated Support for Medical Image Analysis Methods: from Development to Clinical Application," *IEEE Transactions on Information Technology in Biomedicine*, vol. 11, 2007, pp. 47-57.
23. L. Zhao, **C.P. Botha**, J.O. Bescos, R. Truyen, F.M. Vos, and F.H. Post, "Lines of Curvature for Polyp Detection in Virtual Colonoscopy," *IEEE Transactions on Visualization and Computer Graphics*, 2006, pp. 885-892.
24. **C.P. Botha** and F.H. Post, "Improved Perspective Visibility Ordering for Object-Order Volume Rendering," *The Visual Computer*, vol. 21, 2005, pp. 887-896.
25. E.R. Valstar, **C.P. Botha**, M. van der Glas, P.M. Rozing, F.C. van der Helm, F.H. Post, and A.M. Vossepoel, "Towards computer-assisted surgery in shoulder joint replacement," *ISPRS Journal of Photogrammetry and Remote Sensing*, vol. 56, 2002, pp. 326-337.

Books, contributions to books and editorships

1. B. Preim and **C. P. Botha**, "Special Section on Visual Computing in Biology and Medicine (**Guest Editorship**)," Computers & Graphics, vol. 35, no. 2, pp. 218–430, 2011.
2. "Proceedings of the second Eurographics workshop on Visual Computing for Biomedicine," D.Bartz, **C.P. Botha**, R. Machiraju, J. Hornegger, A. Wiebel and B. Preim, eds. Eurographics Association, 2010, 140 pages, ISBN 978-3-905674-28-6. **(editorship)**
3. S. Schutte, G. Asmussen, F. van Keulen, **C.P. Botha**, F-W. Goudsmit, F.C.T. van Der Helm, and H.J. Simonsz, "Orbital Soft Tissue Biomechanics," Encyclopedia of the Eye, 2010, pp. 232-240.
4. "Proceedings of the first Eurographics workshop on Visual Computing for Biomedicine," **C.P. Botha**, G. Kindlmann, W.J. Niessen, and B. Preim, eds. Eurographics Association, 2008, 186 pages, ISBN 978-3-905674-13-2. **(editorship)**
5. **C.P. Botha**, T. de Graaf, S. Schutte, R. Root, P. Wielopolski, F.C. van Der Helm, H.J. Simonsz, and F.H. Post, "MRI-based visualisation of orbital fat deformation during eye motion," *Visualization in Medicine and Life Sciences (VMLS)*, L. Linsen, H. Hagen, and B. Hamann, 2007, pp. 221-236.
6. **C.P. Botha**, "Techniques and Software Architectures for Medical Visualisation and Image Processing," ***PhD thesis***, 2005. ISBN 90-855-9094-9.
7. **C.P. Botha**, "An On-Line Machine Vision Flotation Froth Analysis Platform," ***M.Sc. thesis***, 1999.

Peer-reviewed papers in international conference proceedings

1. N. N. Smit, A. C. Kraima, D. Jansma, M. C. de Ruiter, and **C. P. Botha**, "A Unified Representation for the Model-based Visualization of Heterogeneous Anatomy Data," in *EuroVis Short Papers*, 2012, pp. 85–89.
2. B. P. F. Lelieveldt, **C. P. Botha**, E. L. Kaijzel, E. A. Hendriks, J. H. C. Reiber, C. W. G. M.

Lowik, and J. Dijkstra, "Towards integrated analysis of longitudinal whole-body small animal imaging studies," in *IEEE ICASSP*, 2011, pp. 5768-5771.

3. M.D. Steenwijk, J. Milles, M.A. Buchem, J.H.C. Reiber, and **C.P. Botha**, "Integrated Visual Analysis for Heterogeneous Datasets in Cohort Studies," *IEEE VisWeek Workshop on Visual Analytics in Health Care*, 2010.

4. **C.P. Botha**, P.R. Krekel, E.R. Valstar, P.W. De Bruin, P.M. Rozing, and F.H. Post, "Pre-operative planning and intra-operative guidance for shoulder replacement surgery," *Scientific Visualization: Advanced Concepts* (Volume 1 of Dagstuhl Followups), H. Hagen, Schloss Dagstuhl--Leibniz-Zentrum fuer Informatik, 2010, pp. 179-195.

5. A. Van Dixhoorn, B. Vissers, L. Ferrarini, J. Milles, and **C.P. Botha**, "Visual analysis of integrated resting state functional brain connectivity and anatomy," *Eurographics Workshop on Visual Computing for Biology and Medicine*, D. Bartz, C.P. Botha, J. Hornegger, R. Machiraju, A. Wiebel, and B. Preim, Eurographics Association, 2010, pp. 57-64.

6. P.J. Schaafsma, S. Schutte, H.J. Simonsz, F.H. Post, and **C.P. Botha**, "Dynamic Visualisation of Orbital Fat Deformation using Anatomy-Guided Interaction," *Eurographics Workshop on Visual Computing for Biology and Medicine*, D. Bartz, C.P. Botha, J. Hornegger, R. Machiraju, A. Wiebel, and B. Preim, Eurographics Association, 2010, pp. 1-8.

7. V.F. van Ravesteijn, L. Zhao, **C.P. Botha**, F.H. Post, F.M. Vos, and L.J. van Vliet, "Combining mesh volume and streamline representations for polyp detection in CT colonography," *Proc. ISBI*, 2009, pp. 907-910.

8. **C.P. Botha** and F.H. Post, "Hybrid Scheduling in the DeVIDE Dataflow Visualisation Environment," *Proceedings of Simulation and Visualization*, H. Hauser, S. Strassburger, and H. Theisel, SCS Publishing House Erlangen, 2008, pp. 309-322.

9. F.V. Paulovich, R. Pinho, **C.P. Botha**, A. Heijs, and R. Minghim, "PEx-WEB: Content-based visualization of web search results," *Proc. 12 International Conference Information Visualisation (IV08)*, IEEE Computer Society, 2008, pp. 208-214.

10. L. Zhao, V.F. van Ravesteijn, **C.P. Botha**, R. Truyen, F.M. Vos, and F.H. Post, "Surface Curvature Line Clustering for Polyp Detection in CT Colonography," *Proceedings of the first Eurographics workshop on Visual Computing for Biomedicine (VCBM)*, C.P. Botha, G. Kindlmann, W.J. Niessen, and B. Preim, 2008, pp. 53-60.

11. L. Zhao, **C.P. Botha**, R. Truyen, F.M. Vos, and F.H. Post, "Efficient Seeding and Defragmentation of Curvature Streamlines for Colonic Polyp Detection," *Proceedings of SPIE Medical Imaging 2008*, X.P. Hu and A.V. Clough, 2008.

12. P. Kok, J. Dijkstra, **C.P. Botha**, F.H. Post, E. Kaijzel, I. Que, C. Lowik, J. Reiber, and B.P. Lelieveldt, "Integrated visualization of multi-angle bioluminescence imaging and micro CT," *Proc. SPIE Medical Imaging 2007*, K.R. Cleary and M.I. Miga, 2007.

13. K.C. Maheshwari, S.D. Olabarriaga, **C.P. Botha**, J.G. Snel, J. Alkemade, and A. Belloum, "Problem Solving Environment for Medical Image Analysis," *CBMS '07: Proceedings of the IEEE International Symposium on Computer Based Medical Systems*, 2007, pp. 165-170.

14. J. Blaas, **C.P. Botha**, C. Majoie, A. Nederveen, F.M. Vos, and F.H. Post, "Interactive Visualization of Fused fMRI and DTI for Planning Brain Tumor Resections," *Proc. SPIE Medical Imaging 2007*, K.R. Cleary and M.I. Miga, 2007.

15. J. Blaas, **C.P. Botha**, and F.H. Post, "Interactive visualization of multi-field medical data using linked physical and feature-space views," *Proc. Eurographics / IEEE-VGTC EuroVis*, K. Museth, A. Ynnerman, and T. Möller, 2007, pp. 123-130.

16. P.R. Krekel, **C.P. Botha**, E.R. Valstar, P.W. de Bruin, P.M. Rozing, and F.H. Post,

"Interactive simulation and comparative visualisation of the bone-determined range of motion of the human shoulder," *Proceedings of Simulation and Visualization*, T. Schulze, G. Horton, B. Preim, and S. Schlechtweg, SCS Publishing House Erlangen, 2006, pp. 275-288.

17. J.E. van Zwieten, **C.P. Botha**, B. Willekens, S. Schutte, F.H. Post, and H.J. Simonsz, "Digitisation and 3D reconstruction of 30 year old microscopic sections of human embryo, foetus and orbit," *Image Analysis and Recognition, Proc. 3rd Intl. Conf. on Image Analysis and Recognition (ICIAR 2006)*, A. Campilho and M. Kamel, Springer, 2006, pp. 636-647.

18. J. Blaas, **C.P. Botha**, B. Peters, F.M. Vos, and F.H. Post, "Fast and reproducible fiber bundle selection in DTI visualization," *Proceedings of IEEE Visualization 2005*, C. Silva, E. Gröller, and H. Rushmeier, 2005, pp. 59-64.

19. B. Vrolijk, **C.P. Botha**, and F.H. Post, "Fast Time-Dependent Isosurface Extraction and Rendering," *Proceedings of the Spring Conference on Computer Graphics 2004*, A. Pasko, Comenius University, Bratislava, 2004, pp. 39-48.

20. **C.P. Botha** and F.H. Post, "ShellSplatting: Interactive Rendering of Anisotropic Volumes," *Data Visualization 2003 (Proceedings of Joint Eurographics - IEEE TCVG Symposium on Visualization)*, G. Bonneau, S. Hahmann, and C.D. Hansen, 2003, pp. 105-112.

21. **C.P. Botha** and F.H. Post, "Interactive Previewing for Transfer Function Specification in Volume Rendering," *Data Visualization 2002 (Proceedings of Joint Eurographics - IEEE TCVG Symposium on Visualization)*, D. Ebert, P. Brunet, and I. Navazo, ACM SigGraph, 2002.

22. **C.P. Botha** and F.H. Post, "New technique for transfer function specification in direct volume rendering using real-time visual feedback," *Proceedings of the SPIE International Symposium on Medical Imaging*, S.K. Mun, 2002.

23. M. van der Glas, F.M. Vos, **C.P. Botha**, and A.M. Vossepoel, "Determination of Position and Radius of Ball Joints," *Proceedings of the SPIE International Symposium on Medical Imaging*, M. Sonka, 2002, pp. 1571-1577.

24. **C.P. Botha**, D.M. Weber, M. van Olst, and D.W. Moolman, "A practical system for realtime on-plant flotation froth visual parameter extraction," *Proceedings of IEEE Africon*, 1999, pp. 103-106.

25. C. Coetzee, **C. Botha**, and D. Weber, "PC Based Number Plate Recognition System," *Proceedings of IEEE International Symposium on Industrial Electronics*, 1999, pp. 605-610.

Other (abstracts, local conferences, etc.)

1. H. Pfister, V. Kaynig, **C. P. Botha**, S. Bruckner, V. J. Dercksen, H.-C. Hege, and J. B. T. M. Roerdink, "Visualization in Connectomics," *arXiv:1206.1428*, Jun. 2012.

2. **C. P. Botha**, B. Preim, A. Kaufman, S. Takahashi, and A. Ynnerman, "From individual to population: Challenges in Medical Visualization," *arXiv:1206.1148*, Jun. 2012.

3. A.L.A. Kerver, G.-J. Kleinrensink, N.N. Smit, S. Rabellier, B.M.W. Sedee, and **C.P. Botha**, "Web-Based 'Computer Assisted Surgical Anatomy Mapping'," *Proc. of WEBIST (Conference on Web Information Systems and Technologies)*, J. Filipe and J. Cordeiro, eds., Valencia: 2010, pp. 244-247.

4. D.F. Malan, **C.P. Botha**, R.G. Nelissen, and E.R. Valstar, "Voxel classification of perprosthetic tissues in clinical computer tomography of loosened hip prostheses," *Proc. ISBI*, 2010, pp. 1341-1344.

5. K. Sihan, **C. Botha**, F. Post, S. de Winter, E. Regar, R. Hamers, and N. Bruining, "A Novel

Approach to Quantitative Analysis of Intravascular Optical Coherence Tomography Imaging," *Proceedings of Computers in Cardiology*, 2008, pp. 1089-1092.

6. N. Bruining, S. Groot, **C.P. Botha**, F.H. Post, and R. Hamers, "An Intravascular Ultrasound Simulator of Coronary Plaques Based on Histopathology," *American College of Cardiology Annual Scientific Session (ACC.07)*, 2007.

7. P.R. Krekel, **C.P. Botha**, P.W. de Bruin, E.R. Valstar, P.M. Rozing, and F.H. Post, "Computer-assisted shoulder replacement," *07291 Abstracts Collection -- Scientific Visualization (Dagstuhl Seminar Proceedings)*, D.S. Ebert, H. Hagen, K.I. Joy, and D.A. Keith, Internationales Begegnungs- und Forschungszentrum für Informatik (IBFI), Schloss Dagstuhl, Germany, 2007, p. 2.

8. P.R. Krekel, **C.P. Botha**, F.H. Post, E.R. Valstar, P. de Bruin, and P.M. Rozing, "Range of motion simulation for shoulder arthroplasty," *7th Annual Meeting of the International Society for Computer Assisted Orthopaedic Surgery*, F. Langlotz, B.L. Davies, and P.A. Grützner, Heidelberg, Germany: 2007, pp. 735-738.

9. P.R. Krekel, P.W. de Bruin, **C.P. Botha**, E.R. Valstar, P.M. Rozing, and F.H. Post, "Evaluation of Shoulder Range of Motion Prediction: Materials and Methods," *ASCI 2007 - Proceedings of the 13th Annual Conference of the Advanced School for Computing and Imaging*, 2007.

10. L. Zhao, **C. Botha**, J. Bescos, R. Truyen, F. Vos, and F. Post, "Curvature Lines for Colonic Polyp Characterization," *ASCI 2007 - Proceedings of the 13th Annual Conference of the Advanced School for Computing and Imaging*, 2007.

11. P.R. Krekel, **C.P. Botha**, F.H. Post, E.R. Valstar, and P.M. Rozing, "Pre-Operative Impingement Detection For Shoulder Arthroplasty," *Proceedings of the International Shoulder Group*, 2006.

12. P.R. Krekel, **C.P. Botha**, E.R. Valstar, P.W. de Bruin, P.M. Rozing, and F.H. Post, "Visualisation of gleno-humeral range of motion for shoulder arthroplasty," *ASCI 2006 - Proceedings of the 11th annual conference of the Advanced School for Computing and Imaging*, 2006.

13. S.C. Groot, R. Hamers, F.H. Post, **C.P. Botha**, and N. Bruining, "IVUS Simulation Based on Histopathology," *Computers in Cardiology*, A. Murray, 2006, pp. 681-684.

14. P.W. de Bruin, **C.P. Botha**, B.C. Stoel, E.R. Valstar, and P.M. Rozing, "Validation of navigated glenoid component Placement: an in-vitro pilot study," *19th Annual Symposium International Society for Technology in Arthroplasty (ISTA)*, 2006.

15. J. Blaas, **C.P. Botha**, B. Peters, F.M. Vos, and F.H. Post, "Interactive Exploration of Connective Brain Structure through Diffusion Tensor Imaging," *ASCI 2006 - Proceedings of the 11th annual conference of the Advanced School for Computing and Imaging*, 2006.

16. P. Kok, B.P. Lelieveldt, **C.P. Botha**, F. Post, E. Kaijzel, I. Que, C. Lowik, J.H.C.Reiber, and J. Dijkstra, "INTEGRIM: an image fusion tool for visualization and interpretation of micro-CT and multi-view BLI imaging," *Molecular Imaging (SMI 2006 special issue)*, 2006.

17. R. Root, T.R. de Graaf, **C.P. Botha**, P. Wielopolski, S. Schutte, F.C. van der Helm, and H.J. Simonsz, "Deformation of retrobulbar fat analysis with optical flow technique," *Proceedings of the Association for Research in Vision and Ophthalmology (ARVO) Annual Meeting*, 2005.

18. J. van Zwieten, **C.P. Botha**, B. Willekens, S. Schutte, F.H. Post, and H.J. Simonsz, "Digital 3D Reconstruction of Human Orbitae from High Resolution Serial Sections," *Proceedings of the Association for Research in Vision and Ophthalmology (ARVO) Annual Meeting*, 2005.

19. **C.P. Botha**, T. de Graaf, R. Root, P. Wielopolski, S. Schutte, F.H. Post, F.C. van der Helm,

and H. Simonsz, "Time-varying three-dimensional vector field visualisation for the analysis of retrobulbar fat mobility during eye motion," *ASCI 2005 - Proceedings of the 11th annual conference of the Advanced School for Computing and Imaging*, B.J. Kröse, H.J. Bos, E.A. Hendriks, and J.W. Heijnsdijk, 2005, pp. 271-275.

20. B. Vrolijk, **C.P. Botha**, and F.H. Post, "Fast extraction and rendering of isosurfaces from 4D data," *ASCI 2004 - Proceedings of the 10th annual conference of the Advanced School for Computing and Imaging*, J.J. van Wijk, J.W. Heijnsdijk, K.G. Langendoen, and R. Veltkamp, 2004, pp. 281-290.

21. **C.P. Botha** and F.H. Post, "A Visualisation Platform for Shoulder Replacement Surgery," *Interactive Medical Image Visualization and Analysis (IMIVA) - Satellite Workshop of MICCAI 2001*, S.D. Olabarriaga, W.J. Niessen, and F. Gerritsen, 2001, pp. 61-64.

Professional Activities

1. **Research visits:**
   a. **1.5 month research visit** at the Visual Computing for Medicine group (Prof.dr. Bernhard Preim), University of Magdeburg. April/May 2012. Worked on second edition of Medical Visualization textbook.
   b. **One-month research visit** at the Visual Computing for Medicine group (Prof.dr. Bernhard Preim), University of Magdeburg. April/May 2009. Research on Comparative Visualization.

2. **Invited talks / shorter visits:**
   a. Johannes Kepler University Linz, Institute of Computer Graphics, April 24, 2012: Invited talk - *BrainCove: A tool for voxel-wise fMRI brain connectivity visualization.*
   b. Netherlands Society of Anatomists (NAV) yearly conference, February 2012: Invited plenary talk - *Data Visualization: Driving the Human Visual System for Fun and Profit.*
   c. Netherlands Forum for Biomedical Imaging (NFBI) symposium 2011: Invited plenary talk - *Recent advances in interactive medical volume visualisation.*
   d. International Research Training Group (IRTG) in Kaiserslautern, July 8, 2011: Invited visit and talk - *Medical Visualisation: A concise overview.*
   e. Schloss Dagstuhl SciVis seminar. June 2011.
   f. Dutch Society of Clinical Physicists (NVKF) yearly conference, April 2011: Invited plenary talk - *Visualisation in Surgical Planning and Guidance: A Concise Overview.*
   g. University of Stellenbosch, South Africa. Invited guest-lecturer, designed and taught 1 week full-time post-graduate course in Visualisation. October 2 - 9, 2010.
   h. German Visual Computing in Medicine meeting in Bremen. 1 talk. September 2009.
   i. Visual Computing in Medicine half-day tutorial, presented together with Prof.dr. Bernhard Preim, at Computer Assisted Radiology and Surgery (CARS) conference in Berlin. June 2009.
   j. University of Bergen, Norway. 2 talks. December 2008.
   k. University of Sao Paulo, Brazil. 1 week visit, lectures and presentations. August 2008.
   l. TU Wien and VRVis in Vienna. 2 talks. January 2008.

3. **Co-promotorships:**

    a. Lingxiao Zhao, TU Delft, March 9, 2011. Promotor Prof.dr.ir. F.W. Jansen, section Computer Graphics, TU Delft. Title: *Curvature Lines for Lesion Detection and Visualization in CT Colonography.*

    b. Peter Krekel, LUMC, February 10, 2011. Promotor Prof.dr. R.G.H.H. Nelissen, head Dept. of Orthopaedics, LUMC. Title: *Visualisation of Articular Motion in Orthopaedics.*

    c. Stef Busking, TU Delft, expected early 2011. Promotor Prof.dr.ir. F.W. Jansen, section Computer Graphics, TU Delft. Title: *Visualisation of Variability.*

    d. Francois Malan, LUMC, expected 2012. Promotor Prof.dr. R.G.H.H. Nelissen, head Dept. of Orthopaedics, LUMC. Title: *Minimally Invasive Refixation of Hip Prostheses.*

    e. Peter Kok, TU Delft, expected 2013. Title: *Visualization for Molecular Imaging.*

    f. Thomas Kroes, TU Delft, expected 2014. Title: *Novel pre-operative planning and intra-operative guidance system for shoulder replacement surgery.*

    g. Noeska Smit, TU Delft, STW NIG project granted, expected 2015. Title: *High-definition Atlas-based surgical planning for Pelvic Surgery.*

4. Member of PhD committees:

    a. June 2012 - "Visual Exploration of Human Physiology: Visualizing Perfusion, Blood Flow and Aging", Paolo Angelelli, University of Bergen, Norway.

    b. June 2010 - "Visual Analysis of Multi-Field Data", Jorik Blaas, TU Delft. **Co-supervised project with Ir. Frits Post (co-promotor).**

    c. January 2010 - "Multi-Aspect Visualization: Going from Linked Views to Integrated Views", Jean-Paul Balabanian, University of Bergen, Norway.

5. Chair of:

    a. The Eurographics workshop on Visual Computing for Biology and Medicine (EG VCBM) 2008 in Delft, 2010 in Leipzig and 2012 in Linkoping.

6. International Program Committee (IPC) member of:

    a. IEEE Visualization 2009-2011.

    b. The Joint Eurographics - IEEE VGTC Symposium on Visualization (EuroVis) 2008-2011.

    c. EuroVis 2012 short papers.

    d. BioVis 2012.

    e. Vision Modeling Visualization (VMV) 2009.

    f. Spring Conference on Computer Graphics (SCCG) 2009-2011.

    g. Afrigraph 2009, 2010.

    h. Eurographics 2011 Posters.

7. Invited member of:

    a. Eurographics Medical Prize committee 2010, 2013.

    b. ICCAS (Leipzig University Innovation Centre Computer Assisted Surgery) advisory board since September 2010.

8. Reviewer for the following conferences and journals:

    a. IEEE Transactions on Visualization and Computer Graphics (TVCG).

    b. MICCAI.

    c. IEEE Transactions on Medical Imaging (TMI).

    d. Medical Image Analysis (MedIA).

    e. Eurographics Computer Graphics Forum.

  f. IEEE Visualization Conference.

  g. IEEE Pacific Visualization conference.

  h. Pattern Recognition (Elsevier)

References

Details available upon request.