



## Christophe Van Dijck

Biomedical Engineer,  
Software R&D Engineer

- August 2<sup>nd</sup>, 1990
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- Belgian

## About Me

Passionate about finding *meaningful* innovation in a complex reality. Driven by continuous *self-development*. Loves collaborating with *inspired* people.

## Hard Skills

- Software research
- Lean prototyping
- Software DevOps
- Project management

## Soft Skills

- Result-oriented problem solver
- Critical analytical thinker
- Team leader
- Clear communicator

## Languages

- Dutch
- English
- French

## Working Experience

- |                            |  |   |
|----------------------------|--|---|
| <i>current</i><br>Jan 2020 | <b>Research Coordinator &amp; Team Leader</b><br><i>Craniomaxillofacial Surgery</i><br>Own software innovation roadmap of CMF portfolio: lead team of senior researchers; define (externally funded) research proposals; manage collaboration projects with external (clinical) partners | Materialise NV  |
| Feb 2021<br>Nov 2018       | <b>Research Team Leader</b><br><i>Data-driven and Algorithmic Research</i><br>People management of a team of junior and senior researchers specialized in machine/deep learning, computational geometry, shape modeling and augmented reality  | Materialise NV  |
| Nov 2018<br>Jul 2013       | <b>Research Engineer</b><br>Software research in medical image processing and computational geometry to support Materialise's preoperative planning solutions  | Materialise NV  |
| Summer<br>2012             | <b>Internship</b><br>Maintenance and repair of medical devices of the intensive care unit; co-design calibration protocol using Fluke Patient Simulator; design of experimental set-up for deep brain stimulation using LabVIEW  | University Hospital Antwerp<br>Molecular Imaging Center Antwerp |

## Education

- |             |  |                                 |
|-------------|--|---------------------------------|
| 2014 – 2021 | <b>PhD in Biomechanical Engineering</b><br><i>Mass Personalisation of Preoperative Planning for TKA</i><br>Investigated the use of statistical shape models to predict patient-specific information to support mass personalisation of preoperative planning for total knee arthroplasty | KU Leuven                       |
| 2011 – 2013 | <b>MSc in Biomedical Engineering</b><br><i>3D Registration of MRI and US Brain Images in Premature Infants</i><br>Focus on medical imaging, medical image processing and computational modelling. Graduated with honours   | University Ghent - VUB Brussels |
| 2008 – 2011 | <b>BSc in Electrical Engineering</b><br><i>Design of an Intelligent Outlet</i><br>Graduated with honours   | University Ghent                |





## Continuous Self-Development

- |             |   |                                |
|-------------|---|--------------------------------|
| 2023        | Change Management                               | Materialise - Lector           |
| 2021 - 2022 | Agile Research & Development                    | Materialise                    |
| 2019 - 2020 | Management Development Program                  | Materialise - Synerguy         |
| 2017        | Functional Management                           | Materialise - Synerguy         |
| 2017        | Effective Communication                         | Materialise - BeTalent         |
| 2016        | Machine Learning                                | Coursera - Stanford University |
| 2015        | Academic Writing                                | KU Leuven                      |
| 2014        | Musculoskeletal Modelling by Multibody Dynamics | Aalborg University             |
| 2014        | Design of Experiments                           | Materialise - Amelior          |
| 2013        | Experimental Design                             | KU Leuven                      |

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## Programming

 Python	<div><div></div><div></div><div></div><div></div><div></div></div>
 C++	<div><div></div><div></div><div></div><div></div><div></div></div>
 Qt	<div><div></div><div></div><div></div><div></div><div></div></div>
 CMake	<div><div></div><div></div><div></div><div></div><div></div></div>

## Computational Libraries

NumPy / SciPy	<div><div></div><div></div><div></div><div></div><div></div></div>
ITK	<div><div></div><div></div><div></div><div></div><div></div></div>
VTK	<div><div></div><div></div><div></div><div></div><div></div></div>
Pandas	<div><div></div><div></div><div></div><div></div><div></div></div>
TensorFlow / scikit-learn	<div><div></div><div></div><div></div><div></div><div></div></div>

## Other

Jupyter	<div><div></div><div></div><div></div><div></div><div></div></div>
Azure DevOps	<div><div></div><div></div><div></div><div></div><div></div></div>
LaTeX	<div><div></div><div></div><div></div><div></div><div></div></div>
MS Office	<div><div></div><div></div><div></div><div></div><div></div></div>

## When I'm not working

As a new father, most of my time is spent taking care of my two sons. In my scarce spare time, you can find me in the climbing hall or playing mini-football. Soon, I hope to pick up some old hobbies again, such as woodworking or tinkering with Arduino and Raspberry Pis.

References available upon request

# Relevant Projects and Responsibilities

## Research

2017 - <i>current</i>	Co-defined and drafted several research project proposals on artificial intelligence and augmented reality at several national funding instruments including the VLAIO Baekeland PhD and Research project programs, and the imec.icon program
2015 - 2019	Collaborated on X-ray-based preoperative planning for TKA and THA: 2D-to-3D shape extrapolation research, executing cadaver feasibility studies and supporting regulatory validation
2014 - 2018	Doctoral research (VLAIO Baekeland) on predictive applications of statistical shape modelling for several preoperative planning solutions offered by Materialise

## Software R&D

2021 - <i>current</i>	Responsible for Python-Based Applications: release of production-ready python applications into internal processes or cloud-environments
2018 - <i>current</i>	Responsible for DevOps infrastructure of the internal medical research library: testing, packaging and release management in Azure
2016 - <i>current</i>	Created and maintained the internal medical research library building on scientific computing, (medical) image processing and visualisation libraries including numpy, scipy, TensorFlow, and custom builds of ITK and VTK

## Leadership

2022 - <i>current</i>	Leading senior researchers in the software innovation team focusing on preoperative planning and implant design for the cranio-maxillofacial market
2016 - 2021	Evolved from functional to people management of junior and senior researchers working on data-driven (machine and deep learning) and algorithmic research. Provided technical guidance and supported personal development in both hard and soft skills
2017 - <i>current</i>	Train the medical research team on python programming and software research using coding challenges and proof-of-concept days

## Project Management

2021 - <i>current</i>	Project lead of imec.icon project: <i>AIM - Automated Intraoperative Measurements for AR-Guided Surgery</i>
2018 - <i>current</i>	Project coordination of 4 – 10 concurrent internal and external research projects within the CMF portfolio. Define scope and frequently align with stakeholders (software development, process and clinical engineering teams)

# Main Publications and Presentations

- C. Van Dijck, R. Wirix-Speetjens, T. Huysmans, F. Danckaers, J. Sijbers, and J. Vander Sloten. Influence of Correspondence Method on Statistical Model Based Shape Prediction. In *Symposium on Statistical Shape Models & Applications*, page 2014, 2014
- C. Van Dijck, F. Kerkhof, E. Vereecke, R. Wirix-Speetjens, and J. Vander Sloten. Segmentation of 4D CT Bone Images by Sequential Registration. *IEEE International Symposium on Biomedical Imaging*, pages 621–624, 2015a
- C. Van Dijck, R. Wirix-Speetjens, and J. Vander Sloten. Statistical Model-Based Partial Object Prediction in Distal Radius Reconstruction. In *Proc. Comp. Methods in Biomech. and Biomed. Eng.*, 2015b
- C. Van Dijck, R. Wirix-Speetjens, and J. Vander Sloten. Multibody Shape Models for Distal Radius Reconstruction. In *Symposium on Statistical Shape Models & Applications*, volume 17, page 2014, 2015c
- C. Van Dijck, R. Wirix-Speetjens, I. Jonkers, and J. Vander Sloten. Statistical shape model-based prediction of tibiofemoral cartilage. *Computer Methods in Biomechanics and Biomedical Engineering*, 21(9): 568–578, oct 2018
- K. Plessers, P. Vanden Berghe, C. Van Dijck, R. Wirix-Speetjens, P. Debeer, I. Jonkers, and J. Vander Sloten. Virtual reconstruction of glenoid bone defects using a statistical shape model. *Journal of Shoulder and Elbow Surgery*, 27(1):160–166, 2018
- M. Wesseling, L. Bosmans, C. Van Dijck, J. Vander Sloten, R. Wirix-Speetjens, and I. Jonkers. Non-rigid deformation to include subject-specific detail in musculoskeletal models of CP children with proximal femoral deformity and its effect on muscle and contact forces during gait. *Computer Methods in Biomechanics and Biomedical Engineering*, 22(4):376–385, 2019
- K. Plessers, F. Verhaegen, C. Van Dijck, R. Wirix-Speetjens, P. Debeer, I. Jonkers, and J. Vander Sloten. Automated quantification of glenoid bone defects using 3-dimensional measurements. *Journal of Shoulder and Elbow Surgery*, 29(5):1050–1058, 2020
- A. Lambrechts, C. Van Dijck, R. Wirix-Speetjens, J. Vander Sloten, F. Maes, and S. Van Huffel. Preoperative Prediction of Optimal Femoral Implant Size by Regularized Regression on 3D Femoral Bone Shape. *Applied Sciences*, 13(7):4344, mar 2023