ALEXANDER MEYNEN

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Throughout my PhD, I enabled surgeons to improve their understanding of complex pathologies in orthopaedics through the development of machine learning-assisted computational tools. Now I am looking for a new challenge to apply my diverse engineering background in the field of Data Science and Machine learning. I am commonly recognised for my fast-learning abilities, excellent communication skills and pragmatic attitude.

EXPERIENCE

**Now
2017**

PhD in Medical Sciences, Health and Technology | KU Leuven

Thesis:	"An in-silico design workflow for space-filling acetabular revision implants"
Supervisors:	Prof. Lennart Scheys (KU Leuven), Prof. Amir Zadpoor (TU Delft) and Prof. Michiel Mulier (UZ Leuven)

Scope
- Development of statistical shape model reconstruction workflows in various orthopaedic applications
- Simulations of bone-implant interactions and complex surgeries using machine learning-assisted finite element models
- Optimization of computational model validation through machine learning
- Statistical analyses and visualization of research results
- Sharing scientific data with clinicians and engineers through presentations and journal papers

Publications:	First author of nine peer-reviewed papers and presentations at six international conferences
Teaching:	Supervisor of ten master thesis students, teaching assistant duties
Grants/awards:	Personal funding Strategic Basic research from FWO 2019-2022
	Biomechanics Young Investigator award at EORS 2019
	Best abstract award Departmental Day 2020

2016

Summer Internship | Siriraj hospital & Mahidol University (Bangkok, Thailand)
Design of a brain-computer interface (Data acquisition, filtering)

EDUCATION

**2017
2015**

Master in Engineering Science, Biomedical Technology | KU Leuven
- Graduated magna cum laude
- Thesis: "Analysing the Validity of a Skull Fracture Energy Criterion through Subject-specific Finite Element Modeling of Head Impacts"
- Awarded with best master thesis (best of class 2017)

**2015
2014**

Master in Engineering Technology | KU Leuven
- Major: Electromechanical engineering
- Minor: Intelligent Mechanics

- Graduated cum laude
- Thesis: "Autonomous mobile robot navigation using the iRobot Roomba"
- International: Erasmus+ Exchange Politecnico di Torino, Italy

| 2014 | Bachelor in Engineering Technology | KU Leuven |
| 2011 | • Major: Electromechanical engineering |

SKILLS

Programming skills	Python (experiences with ML stack), MATLAB, SQL
Engineering skills	FEA (Abaqus), Statistical shape modeling, CAD (Solidworks, SolidEdge, nTopology), 3D printing, Mimics Innovation Suite, Autonomous navigation
Language skills	Dutch (mother tongue), English (Advanced), French (Elementary), German (Beginner)

EXTRACURRICULAR ACTIVITIES

Online courses on Data science and Machine learning
- Data Scientist Track (with Python) | Datacamp
- AI for Medical Diagnosis | Coursera (by Deeplearning.ai)
- Deep Learning Specialization | Coursera (by Deeplearning.ai)
- Machine Learning | Coursera (by Deeplearning.ai)
- Data Scientist: Machine Learning Specialist | codeacademy

Interests
- Runner, cyclist (fan), technology (hardware, 3D printing, …), reading

LIST OF PUBLICATIONS

JOURNAL PAPERS

De Kegel, D., **Meynen, A. (joint first author)**, Famaey, N., Depreitere, B., Vander Sloten, J., van Lenthe, G. (2019). Skull fracture prediction through subject-specific finite element modelling is highly sensitive to model parameters. Journal Of The Mechanical Behaviour Of Biomedical Materials.

Kolken, H., Lietaert, K., van der Sloten, T., Behdad, P., **Meynen, A.**, Van Loock, G., Weinans, H., Scheys, L., Zadpoor, A.A. (2020). Mechanical performance of auxetic meta-biomaterials. Journal Of The Mechanical Behavior Of Biomedical Materials.

Meynen, A., Matthews, H., Nauwelaers, N., Claes, P., Mulier, M., Scheys, L. (2020). Accurate reconstructions of pelvic defects and discontinuities using statistical shape models. Computer Methods In Biomechanics And Biomedical Engineering.

Verhaegen, F., **Meynen, A. (joint first author)**, Matthews, H., Claes, P., Debeer, P., Scheys, L. (2020). Determination of pre-arthropathy scapular anatomy with a statistical shape model – Part I: Rotator Cuff Tear arthropathy. Journal Of Shoulder And Elbow Surgery.

Meynen, A., Vles, G., Zadpoor, A.A., Mulier, M., Scheys, L. (2021). The morphological variation of acetabular defects in revision total hip arthroplasty – a statistical shape modeling approach. Journal Of Orthopaedic Research.

Verhaegen, F., **Meynen, A. (joint first author)**, Debeer, P., Scheys, L. (2021). Determination of pre-arthropathy scapular anatomy with a statistical shape model – Part II: shoulder osteoarthritis. Journal Of Shoulder And Elbow Surgery.

Vles, G., **Meynen, A.**, De Mulder, J., Ghijselings, S. (2021). The External Obturator Footprint Is a Usable, Accurate, and Reliable Landmark for Stem Depth in Direct Anterior THA. Clinical Orthopaedics and Related Research.

Verhaegen, F., **Meynen, A. (joint first author)**, Plessers, K., Scheys, L., Debeer, P. Quantitative SSM-based analysis of humeral head migration in rotator cuff tear arthropathy patients. Journal of Orthopaedic Research.

Kolken, H.M A., Garcia, A.F., Du Plessis, A., **Meynen, A.**, Rans, C., Scheys, L., Mirzaali, M.J., Zadpoor, A.A. (2022). Mechanisms of fatigue crack initiation and propagation in auxetic meta-biomaterials. Acta Biomaterialia.

Meynen, A., Vles, G., Roussot, M., van Eemeren, A., Wafa, H., Mulier, M., Scheys, L. (2022) Advanced Quantitative 3D Imaging Improves The Reliability Of The Classification Of Acetabular Defects. Archives of Orthopaedic and Trauma Surgery.

Verhaegen, F., **Meynen, A. (joint first author)**, Pitocchi, J., Debeer, P., Scheys, L. (2022). Quantitative statistical shape model-based analysis of humeral head migration, Part 2: Shoulder osteoarthritis. Journal of Orthopaedic Research.

CONFERENCE ABSTRACTS

Meynen, A., De Kegel, D., Famaey, N., van Lenthe, H., Vander Sloten, J. (2017). Analysing the Validity of a Skull Fracture Energy Criterion Through Subject-Specific Finite Element Modelling of Skull Impacts. Presented at the IRCOBI.

Meynen, A., Verhaegen, F., Debeer, P., Scheys, L. (2018). Cuff Tear Arthropathy: Determination of predisposing scapular anatomy with a statistical shape model. In: Bone & Joint Journal. Presented at the International Society for Technology in Arthroplasty.

Meynen, A., Verhaegen, F., Debeer, P., Scheys, L. (2019). Scapular reconstructions using statistical shape modeling: Design and Validation. Presented at the European Orthopaedic Research Society.

Meynen, A., Verhaegen, F., Mulier, M., Debeer, P., Scheys, L. (2020). Statistical shape models can be used to accurately predict the glenoid parameters from partial CT scans. Presented at the Annual Meeting European Orthopaedic Research Society.

Meynen, A., Vles, G., Mulier, M., Scheys, L. (2020). A statistical shape modeling approach to describe the morphological variation of acetabular defects. Presented at the Orthopaedic Research Society 2021 Annual Meeting.

Meynen, A., Vanquickenborne, F., Bartholomeeusen, S., van Lenthe, G., Scheys, L. (2021). Structural allograft impaction in opening wedge high tibial osteotomy improves stability and stress shielding: A finite element study. Presented at the European Society of Biomechanics.