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stephan-wenninger

Stephan
WENNINGER



| Education

- 2018–2025 ○ **PhD Computer Science**, *Bielefeld University & TU Dortmund University*
2015–2018 ○ **MSc Intelligent Systems**, *Bielefeld University*
2011–2015 ○ **BSc Cognitive Sciences**, *University of Tübingen*

| PhD Thesis

- Title *Realistic Virtual Humans for VR Therapy of Body Image Disorders*
Advisor Prof. Dr. Mario Botsch
Abstract *In my PhD thesis, I developed methods for reconstructing and modifying realistic and personalized virtual humans, also called avatars, to be employed in the context of a VR-based body image disorder therapy system. First, a method for reconstructing such avatars from smartphone videos is presented, which greatly reduces the hardware demands in comparison to previous approaches. The second part of the thesis deals with reconstructing volumetric representations for virtual humans, where anatomical details such as bone structure and muscle and fat tissue are inferred from surface scans. This allows to create a statistical model of human bone structure and soft tissue distribution, enabling fast skeleton inference and semantic localized shape modification.*

| Experience

- 2020–2024 ○ **Research Associate**, *TU Dortmund University*
Computer Graphics & Geometry Processing Group
 - ViTraS - Virtual Reality Therapy by Stimulation of Modulated Body Perception
 - Surface based and anatomical reconstruction of realistic virtual humans
 - Implementation of optimization algorithms for triangle and tetrahedral meshes
 - Point cloud and image processing of photogrammetry data
 - Statistics/Generative models for human body shapes
 - Publication and presentation of scientific research at international conferences
 - C++ • Python

2018–2020 ○ **Research Associate**, *Bielefeld University*
Computer Graphics & Geometry Processing Group
 - 3D avatar reconstruction from smartphone videos
 - Frame extraction based on optical flow analysis of video data
 - Photogrammetry and mesh optimization
 - C++ • Python

2016–2018 ○ **Research Assistant**, *Bielefeld University*
Cognitive Systems Engineering Group
 - Development of smart assistance systems for assembly processes
 - Process modelling via Camunda BPMN (Business Process Model and Notation)
 - Supervising user study at the company of an industry partner
 - Stand staff at Hannover Messe
 - C++ • C# • HTML • Java • Javascript • Python

- 2016–2016 ○ **Research Assistant, University of Duisburg-Essen**
 Social Psychology “Media & Communication” Group
 • Programming a user study for investigating virtual agents
 • Java • Python
- 2014–2015 ○ **Research Assistant, Max Planck Institute for Intelligent Systems, Tübingen**
 Software Workshop Group
 • Developing an application for capturing data from Microsoft Kinect camera streams for recording 4D data of human movements
 • Implementing a Django web application for storing and serving documentation and build artifacts of internal software components of various groups at MPI IS Tübingen
 • Automated video processing for recordings of presentations at Machine Learning Summer School 2015 Tübingen
 • C++ • C# • Python
- 2014–2015 ○ **Research Assistant, University of Tübingen**
 Discrete Mathematics Group
 • Student tutor for the lecture Mathematics I
 • Tutoring and grading of exercise groups and exams
- 2013–2014 ○ **Research Assistant, Leibniz-Institut für Wissensmedien, Tübingen**
 Social Processes Group
 • Programming and supervising user studies
 • HTML • Javascript

| Skills

Research Computer Graphics, 3D Geometry Processing
 Code C++, Python, LaTeX, Matlab
 Libraries Eigen, [PMP](#), ShapeOp, OpenGL, OpenCV, OpenVR, OpenPose, dlib, GLFW, DearImGui, ALGLIB, CGAL, NumPy, OpenCL
 Tools Git, CMake, Agisoft Metashape, Blender, RenderDoc

| Languages

German Native
 English Fluent

| Publications

- [1] Maria Korosteleva, Timur Levent Kesdogan, Stephan Wenninger, Fabian Kemper, Jasmin Koller, Yuhang Zhang, Mario Botsch, and Olga Sorkine. **GarmentCodeData: A Dataset of 3D Made-to-Measure Garments With Sewing Patterns**. *Computer Vision – ECCV* (2024).
- [2] Stephan Wenninger, Fabian Kemper, Ulrich Schwanecke, and Mario Botsch. **TailorMe: Self-Supervised Learning of an Anatomically Constrained Volumetric Human Shape Model**. *Computer Graphics Forum* 43.2 (2024).
- [3] David Mal, Nina Döllinger, Erik Wolf, Stephan Wenninger, Mario Botsch, Carolin Wienrich, and Marc Erich Latoschik. **Am I the Odd One? Exploring (In)Congruencies in the Realism of Avatars and Virtual Others in Virtual Reality**. *Frontiers in Virtual Reality* 5 (2024).
- [4] Nina Döllinger, Erik Wolf, David Mal, Stephan Wenninger, Mario Botsch, Marc Erich Latoschik, and Carolin Wienrich. **Resize Me! Exploring the User Experience of Embodied Realistic Modulatable Avatars for Body Image Intervention in Virtual Reality**. *Frontiers in Virtual Reality* 3 (2022).
- [5] Erik Wolf, David Mal, Viktor Frohnäpfel, Nina Döllinger, Stephan Wenninger, Mario Botsch, Marc Erich Latoschik, and Carolin Wienrich. **Plausibility and Perception of Personalized**

Virtual Humans between Virtual and Augmented Reality. *Proc. of the IEEE International Symposium on Mixed and Augmented Reality (ISMAR)*. 2022.

- [6] Erik Wolf, Nina Döllinger, David Mal, Stephan Wenninger, Andrea Bartl, Mario Botsch, Marc Erich Latoschik, and Carolin Wienrich. **Does Distance Matter? Embodiment and Perception of Personalized Avatars in Relation to the Self-Observation Distance in Virtual Reality.** *Frontiers in Virtual Reality* 3 (2022).
- [7] Martin Komaritzan, Stephan Wenninger, and Mario Botsch. **Inside Humans: Creating a Simple Layered Anatomical Model from Human Surface Scans.** *Frontiers in Virtual Reality* 2 (2021).
- [8] Andrea Bartl, Stephan Wenninger, Erik Wolf, Mario Botsch, and Marc Erich Latoschik. **Affordable but not Cheap: A Case Study of the Effects of Two 3D-Reconstruction Methods of Virtual Humans.** *Frontiers in Virtual Reality* 2 (2021).
- [9] Stephan Wenninger, Jascha Achenbach, Andrea Bartl, Marc Erich Latoschik, and Mario Botsch. **Realistic Virtual Humans from Smartphone Videos.** *Proc. of the ACM Symposium on Virtual Reality Software and Technology*. 2020.