

PhD Position in Marker-less 3D Human Pose Estimation / Human Performance Capture / 4D Human Capture, Max-Planck-Institute (MPI) for Informatics (team behind, e.g., VNect, MoFA, Deep Video Portraits, theCaptury, Face2Face)

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This is a call for applications for PhD positions in my research group Graphics, Vision & Video (gvv.mpi-inf.mpg.de) at the Max-Planck-Institute (MPI) for Informatics in Saarbruecken, Germany (www.mpi-inf.mpg.de).

The GVV group looks at challenging open research problems at the intersection of computer vision, computer graphics and machine learning. We have pioneered methods in off-line and real-time marker-less motion and performance capture of humans, faces, hands and deformable objects, and have developed entirely new ways for efficient and high-quality inverse rendering. Very recent examples are the Deep Video Portraits face reenactment algorithm from SIGGRAPH 2018, the Face2Face face capture and reenactment approach from CVPR 2016, the MoFA - model-based face autoencoder from ICCV 2017, the VNect real-time monocular full-body motion capture approach (SIGGRAPH 2017), and the first approach for real-time intrinsic video decomposition (SIGGRAPH 2016). We generally look into pushing the boundaries of 3D / 4D scene reconstruction in general scenes, capturing for CG content creation, 3D video and telepresence, image-based rendering, and computational photography and videography.

We develop new approaches for machine learning in vision and graphics in particular new ways for combining model-based and learning-based methods. With our research, we thus advance the algorithmic foundations behind augmented and virtual reality, and the perception capabilities of autonomous systems and vehicles.

We are looking for PhD students to work with us on advancing the state of the art in one of the following areas: high-quality in-the-wild marker-less human 3D pose estimation, marker-less performance capture, 4D Human reconstruction and/or neural rendering of humans. In particular, we look into methods that only require a single camera, for instance based on new ways of deeply integrating machine learning –based and model-based algorithms.

Take a look at our list of projects and publications:

[http://gvv.mpi-inf.mpg.de/GVV\\_Projects.html](http://gvv.mpi-inf.mpg.de/GVV_Projects.html)

[http://gvv.mpi-inf.mpg.de/GVV\\_Publications.html](http://gvv.mpi-inf.mpg.de/GVV_Publications.html)

and our Youtube Channel:

<https://www.youtube.com/channel/UCNdXGCWZ6oZqbt5Y12L9inw>

Some of our research results also form the basis for our award-winning startup company [www.thecaptury.com](http://www.thecaptury.com) that commercializes the most advanced real-time marker-less motion capture technology that is available on the market.

Successful applicants will join a vibrant and dynamic research environment in which we constantly push the boundary of what is possible today in visual computing. The MPI for Informatics has a wide range of state-of-the-art computing and research equipment, including several large scale 3D / 4D scanners and a full multi-view motion and performance capture studio featuring several multi-camera and multi-sensor

systems. In our team, you will rethink the basic algorithmic concepts in the aforementioned areas to push the boundaries of today's technology.

Application process:

Applicants for PhD positions should have a Bachelor, preferably Master degree, in computer science or a closely related field. Course work and research experience in one or more of the following areas is desirable:

computer vision, machine/deep learning, multi-view / 3D scene reconstruction methods, 4D reconstruction, computer graphics, computer animation, marker-less performance capture, marker-less motion capture, tracking algorithms, 3D Video, virtual / augmented reality.

Applicants should have an excellent academic track record. Publications in one of the above areas are a plus. A candidate should be fluent in written and spoken English (ideally documented by respective test scores) and be willing to travel. Full funding and benefits are provided. If you are interested, please send a complete application package, including a CV, a research statement, transcripts and certificates, and the contacts of two references

to

Prof. Dr. Christian Theobalt  
MPI for Informatics  
theobalt -at- mpi-inf.mpg.de

About Christian Theobalt and the GVV group

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Christian Theobalt is a Professor of Computer Science and the head of the research group "Graphics, Vision, & Video" at the Max-Planck-Institute (MPI) for Informatics, Saarbruecken, Germany. Most of his research deals with algorithmic problems that lie on the boundary between the fields of Computer Vision and Computer Graphics, such as static and dynamic 3D scene reconstruction, marker-less motion and performance capture, computer animation, virtual and augmented reality, appearance and reflectance modeling, machine learning for graphics and vision, new sensors for 3D acquisition, advanced video processing, as well as image- and physically-based rendering. For his work, he received several awards, including the Otto Hahn Medal of the Max-Planck Society in 2007, the EUROGRAPHICS Young Researcher Award in 2009, and the German Pattern Recognition Award 2012, and the Karl Heinz Beckurts Award in 2017. In 2015 he was elected one of the top 40 innovation leaders under the age of 40 in Germany by the magazine Capital. He received two ERC grants by the European Union, the EU's most prestigious and most competitive grant for individual researchers: in 2013 he was awarded an ERC Starting Grant, and in 2017 an ERC consolidator grant.

He is also a co-founder of a spin-off company from his group - [www.thecaptury.com](http://www.thecaptury.com) - that sells the most advanced marker-less motion and performance capture solution commercially available today. The

group Graphics, Vision & Video has close collaborations with international academic and industry partners and lives a very collaborative team-oriented working style within the group itself.

Check out our team: [http://gvv.mpi-inf.mpg.de/GVV\\_Team.html](http://gvv.mpi-inf.mpg.de/GVV_Team.html) .

#### About the environment

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The Max-Planck Institute for Informatics (MPI-INF) ([www.mpi-inf.mpg.de](http://www.mpi-inf.mpg.de)) is one of the world's leading research institutes in Computer Science in general, and Visual Computing in particular. It is located on the campus of Saarland University in Saarbruecken, Germany. MPI-INF is embedded in a unique cluster of computer science research. Around 400 PhD students in CS do research in the different CS institutes on campus under the roof of a joint CS graduate school.

In immediate neighborhood on campus, there are several other computer science research institutes of world renown with which close collaborations exist: the German Research Center for Artificial Intelligence (DFKI), the Max-Planck-Institute for Software Systems, the Institute for Bioinformatics, the Excellence Cluster Multimodal Computing and Interaction, the new Helmholtz research center on IT Security, Privacy and Accountability (CISPA), and the Computer Science Department of Saarland University. The Leibniz Center for Informatics in Schloss Dagstuhl is also located nearby. ([www.informatik-saarland.de](http://www.informatik-saarland.de))