

Holger Graf Fraunhofer IGD – Head of Department “Virtual and Augmented Reality”

Holger Graf received his diploma degree in 'Technomathematik' (Industrial Mathematics) from the University of Karlsruhe in 1997 and graduated in 1998 from the Department of Computer Science at the University of Bristol (England) with a M.Sc. in 'Global Computing and Multimedia'. Since January 2000, he followed a research position as member of staff of the Fraunhofer-Institute for Computer Graphics (IGD) in Darmstadt, Germany, where he was working on the integration of CAE esp. finite element methods into VR within the department of Industrial Applications, nowadays Interactive Engineering Technologies. His research interests are #VirtualReality (VR), #AugmentedReality (AR) and #EXTENDEDREALITY (xR) and the exploitation of #DEEPLARNING based visual computing, model based #SYNTHETIC_TRAINING and #AI, #NEUROMORPHIC computing and edge AI technologies for interactive 3D xR-environments applied within the industrial context. Aside his position as research assistant, he was responsible for the coordination and communication of Fraunhofer IGD activities with the European commission services. Furthermore he lectured 'Computer Graphics III', 'Geometric Modelling of CAD/CAE', 'Ambient Mobility' and 'Ambient Intelligence'. He has been editor in chief and co-conference chair for the IEEE Digital Cultural Heritage (DCH) 2013, 2015, 2025 Member of the organising committee of DCH 2013 and the rebranded Eurographics Workshop for Computer Graphics on Cultural Heritage in 2014, 2015, 2023, 2024. He acts as IPC member for different conferences and scientific events published by ACM, IEEE and Eurographics.

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1. PERSONAL INFORMATION	
Mr. Mrs. Ms. Mr.	
NAME (Surname)	Graf (First names) Holger
DATE OF BIRTH	
Day: []	Month: [] Year: []
City: []	Country: []
NATIONALITY	
Present Nationality:	[]
MARITAL STATUS	[] [] []
2. PROFESSIONAL QUALIFICATIONS	
Industrial Mathematics, Dipl.-Math.-Techn., University of Karlsruhe Computer Science, Master of Science, University of Bristol, England	
3. AREAS OF SPECIALISATION AND EXPERIENCE	
<ul style="list-style-type: none"> Computer Science: <ul style="list-style-type: none"> Computer Graphics Computer Vision Software engineering Visualisation & Interaction technologies HMI, VR/AR Message-oriented Middleware (MoM), Object request brokers (ORBs) Research: <ul style="list-style-type: none"> Scientific research Publication of research results in form of scientific papers, presentation on national/intern'l fairs Project management and administration 	

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<ul style="list-style-type: none"> • Programming languages: <ul style="list-style-type: none"> ◦ C, C++, HTML5/CSS/JS • Operating systems: <ul style="list-style-type: none"> ◦ Linux, Windows • Computer Graphics <ul style="list-style-type: none"> ◦ OpenGL, OpenES, WebGL, X3Dom, WebVis • GUI frameworks/toolkits: <ul style="list-style-type: none"> ◦ Qt, QML, Swing, AWT
4. EMPLOYMENT HISTORY
<p>2019 - Present Fraunhofer IGD, Darmstadt, Germany</p> <p>Head of Department</p> <p>Responsibilities – Design and definition of R&D core areas within the area of Virtual and Augmented Reality</p> <ul style="list-style-type: none"> • Design and development of advanced HMI for web based visualisation techniques for a diversity of domains (aerospace, automotive, digital heritage) • Design and development of advanced computer vision and machine learning techniques for quality control systems based on Augmented Reality • Mobile and device independent rendering based on micro-service infrastructures • Mentoring, Supervision and coordination of research staff and scientific personnel <p>Expert technical support for proposals (for national/international software development projects – also large scale projects)</p>
<p>2009 - Present Fraunhofer IGD, Darmstadt, Germany</p> <p>Senior Manager</p> <p>Responsibilities – Design and definition of R&D core areas within the area of 3D Reconstruction</p> <ul style="list-style-type: none"> • Design and development of new HMI for web based visualisation techniques for a diversity of domains (aerospace, automotive, digital heritage) • Design and development of new mobile acquisition and environment perception , reconstruction and visualisation techniques • Mentoring, Supervision and coordination of research staff and scientific personnel • Expert technical support for proposals (for national/international software development projects – also large scale projects)
<p>2007 – 2009 Branch Management, ZGDV premises in Darmstadt</p> <p>Responsibilities – Definition and Instalment of mid and long-term strategy of core area “Interactive Media”</p> <ul style="list-style-type: none"> • Project management and interaction, negotiation with project partners, customers and clients • Controlling of economical parameters and management of resources and capacities • Instruction, supervision, and coordination of employees and students • Conception, realization, and presentation of technical demonstrations and trainings • Representation of projects on national/international events and trade fairs • Writing and management of grant proposals and general project administration • Research and publication of research results on international conferences
<p>2006 – 2007 Head of Department “Visual Computing”, Zentrum für Graphische Datenverarbeitung (ZGDV), Darmstadt</p> <p>Responsibilities – Strategic definition of the department core activities, R&D core area definition</p> <ul style="list-style-type: none"> • Line Management and accountable for budget ad staff/team • Mentoring, supervision, and coordination of employees and students • Project management, project acquisition • Positioning of strategic topics at national/international funding bodies • Conception, preparation, and presentation of technical demonstrations and trainings
<p>2000 – 2006, Fraunhofer Institu für Graphische Datenverarbeitung (IGD), Research Assistant</p> <p>Responsibilities: Project Management, S&T coordination of FEM based interactive simulations</p> <ul style="list-style-type: none"> • VR/AR HMI development, CAD/CAE/VR integration • Project Acquisition, Grant Proposal writing, presentation of research results at national/international conference, trade fairs and networks • EU coordinator of activities of the IGD
<p>1999, Institut für Telematik, Trier</p> <p>Intern</p> <p>Responsibilities: PKI Cyber Security Infrastructures</p> <ul style="list-style-type: none"> • Software development: Java, J2EE, C++, C, HTML/JS

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<ul style="list-style-type: none"> Smart/Java Cards 					
5. EDUCATION					
	Name and Location	Dates		Major Subjects	Degree or other Diploma
		From	To		
College or University	Technische Universität Darmstadt – Fachbereich Informatik	2009	???	Interactive conceptual simulations for preliminary design analysis	Envisaged Doctorate/PhD
College or University	University of Bristol, England	1998	1999	Computer Science: Advanced Computing	Master of Science
College or University	Frankfurt University of Applied Sciences, Germany	1990	1997	Mathematics for Technology	Diplom-Technomathematiker
Senior/High Secondary School	Goethe-Gymnasium, Emmendingen, Germany	1982	1988		Abitur
6. LIST OF THESES, PATENTS, PUBLICATIONS AND OTHER SIGNIFICANT WORK					
<p>[1] Jens Keil, J., Schmitt, F., Engelke, T., Graf, H., Olbrich, M., "Augmented Reality Views: Discussing the Utility of Visual Elements by Mediation Means in Industrial AR from a Design Perspective", in 2018 International Conference on Virtual, Augmented and Mixed Reality (VAMR 2018) – Virtual, Augmented and Mixed Reality: Applications in Health, Cultural Heritage, and Industry pp 298-312, Springer, 2018</p> <p>[2] Graf, H., Stork, A., "CAE/VR Integration – A Qualitative Assessment of Advanced Visualization for Interactive Conceptual Simulations (ICS) in Industrial Use", in 2018 International Conference on Virtual, Augmented and Mixed Reality (VAMR 2018) – Virtual, Augmented and Mixed Reality: Applications in Health, Cultural Heritage, and Industry pp 260-271, Springer, 2018</p> <p>[3] Olbrich, M., Graf, H., Keil, J., Gad, R., Bamfaste, S., Nicolini, F., "Virtual Reality Based Space Operations – A Study of ESA's Potential for VR Based Training and Simulation" in International Conference on Virtual, Augmented and Mixed Reality (VAMR 2018): Virtual, Augmented and Mixed Reality: Interaction, Navigation, Visualization, Embodiment, and Simulation pp 438-451, Springer, 2018</p> <p>[4] Graf, H., Stork, A., "CAE/VR Integration - A Path to Follow? A Validation Based on Industrial Use", in European Conference on Modelling and Simulation (ECMS), 31, 2017, Budapest, Hungary</p> <p>[5] Graf, H., Larson, M., Stork, A., "Interactive 3D Subdomaining using Adaptive FEM based on Solutions to the Dual Problem", In: Proceedings of the ACM Virtual Reality International Conference – Laval Virtual (VRIC 2014), Laval, France, ACM New York, NY, USA, 2014</p> <p>[6] Yoon, S.-M., Graf, H., Kuijper, A., "Hierarchical Image Representation using 3D Camera Geometry for Content-based Image Retrieval", In: Journal of Engineering Applications of Artificial Intelligence, 30:235–241, April 2014</p> <p>Overall: 88 publications since 2001</p>					

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7. LANGUAGES		Mother Tongue: German	
	Writing	Reading	Speaking
English	Fluent	Fluent	Fluent
Other Languages			
French	Fair	Fair	Fair
Spanish	Poor	Poor	Poor
Grade as: Fluent/Good/Fair/Poor			
8. RELATIVES			
Do you have a spouse, registered partner, child, parent, brother or sister working at ESA?			
NO: x			
YES:			
Specify name & relationship:			

Date/Place

Signature Holger Graf