

Andreas Reichinger

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Interests

GUI-Design, Human Computer Interaction, Touchless Interfaces;
Accessibility in Arts, Haptics, Touch Tool Creation, Rapid Prototyping, 3D Scanning;
3D Computer Vision, Photogrammetric Reconstruction, Depth Sensors;
Computational Photography, Stereo Photography, Camera Arrays;
Virtual Reality, Training Simulation, World Building
Programming: fluent: C#, C++, Mathematica, Java; also: Python, C++/CLI, F#, Matlab, VB;

Education

currently PhD Student, Vienna University of Technology, Computer Science
under the supervision of Prof. Dr. Werner Purgathofer
Jul. 2010 ICVSS 2010, international computer vision summer school
Sep. 2003 Master's degree awarded (Dipl.-Ing.(FH), with distinction)
1999 – 2003 University of Applied Sciences, FH Hagenberg (MTD - Media Technology and Design)
1993 – 1998 Higher Technical College Leonding (Electronics and Communications Engineering)

Employment

2005 - present VRVis – Zentrum für Virtual Reality und Visualisierung Forschungs-GmbH
2003 - 2004 FAW – Institut für Anwendungsorientierte Wissensverarbeitung
2002 - 2003 VRVis (internship, master's thesis)

Research Projects

2022 – “Virtual Reality for security and stockpile management in ammunition logistics”, VRVis.
Photogrammetric reconstruction and manual modelling of ammunition boxes, and storage
facilities for Heereslogistikschule of the Austrian military. Realization in Unity3D: World
building, interaction and optimization for VR. <https://www.vrvis.at/en/research/research-projects/virtual-reality-for-security-and-stockpile-management-in-ammunition-logistics>

2022 – “BeauCoup - Building Active User Experiences to Bring Culture to the People”, VRVis.
Adaption of Interactive Tactile Multimedia Guide for elderly people.
<https://www.beaucoup-project.eu/>
<https://www.vrvis.at/en/research/research-projects/beaucoup>

2020 – 2021 “Lightbox 2.0 – Photogrammetric key scanner”, VRVis.
The applied research project Lightbox 2.0 focuses on the development of a photogrammetric
3D scanning pipeline for automatic and deep learning-based modeling of all kinds of keys.
<https://www.vrvis.at/en/research/research-projects/lightbox-20-photogrammetric-key-scanner>

2016 – 2019 “ARCHES”, VRVis. **(H2020 project: 693229) Project Manager for part at VRVis**
Development of Interactive Tactile Multimedia Guide.
Improvement of Relief Printer Medium and development of Relief Printer Mechanics.
Evaluation with participative research groups in six European museums.
<http://arches-project.eu/>

- 2014 – 2016 “AMBAVis”, VRVis. **(Erasmus+ project: 2014-1-AT01-KA204-001014)**
 Development of printable medium for 3D relief-printer based on PinArt.
 Context-sensitive audio guide based on optical finger tracking on relief surfaces.
 Development and evaluation of tactile material in a museum context.
<http://www.ambavis.eu/>
- 2013 – 2016 “Deep Pictures”, VRVis. **(FWF-funded project: P24124-N13)**
 Follow-up project of Tactile Paintings, 2010. We study advanced techniques to simplify the creation of tactile representations of pictures. In cooperation with IST Institute of Science and Technology Austria.
<http://www.vrvis.at/projects/deep-pictures>
- 2012 – 2016 “LocaPhoto”, VRVis. **(FWF-funded project: P24352-N23)**
 Evaluation and Development of scanning methods to capture human pinnae (the outer part of the ear) for applications in computational acoustics. The project is performed in cooperation with the Acoustic Research Institute (Austrian Academy of Sciences) who use the scans for simulation of the head related transfer-functions to study directional hearing.
<https://www.vrvis.at/en/research/research-projects/former-projects/locaphoto>
- 2011 “Tactile Exhibits”, VRVis.
 Adaption of the exhibition "In Arbeit" according to the design-for-all principle.
 Development and Application of various scanning and (re)production technologies.
 In co-operation with ArteConTacto and Vienna Museum of Technology.
<http://www.artcontacto.org> <http://www.technischesmuseum.at>
- 2010 “Tactile Paintings”, VRVis. **(funded by KulturKontakt Austria)**
 Development of a computer-assisted workflow for the creation of different tactile representations of paintings in co-operation with Kunsthistorisches Museum in Vienna.
 Development of production methods and actual production of touch tools for three paintings.
<https://old.vrvis.at/research/projects/tactile-paintings/>
- 2010 “Questionnaire”
 Marker-based orientation of scanned documents for automatic evaluation.
- 2009 “Archetype”, VRVis.
 Image-based 3D content creation, robust automatic camera pose estimation, photogrammetric reconstruction
- 2008 “dragonCAM – A System for Synthesizing Video from Still Images”, VRVis.
 (cancelled after framework design due to insolvency of industry partner)
<https://old.vrvis.at/research/projects/dragoncam/index.html>
- 2004 - 2008 “RULRE”, VRVis.
 Development of a rendering framework, including light map generation with photon mapping and real-time blending of light sources.
<https://old.vrvis.at/research/archived-projects/index.html>
- 2003 - 2004 “ReSi – Reality Simulations”, FAW.
 Design and implementation of a virtual reality framework for safety training simulations based on open-source game engines.
 Hardware support for stereo glasses, hand and head tracking and other input devices.
- 2003 “Optical Tracking”, VRVis, Master’s Thesis.
 Java-based improvement of a marker-based tracking system (A.R.T. tracker) for special cases, when target is occluded from all but a single camera. <http://www.ar-tracking.de/>

2002 “Tree Designer”, VRVis, Internship.
WYSIWYG Tool for convenient design and procedural generation of realistic and naturally looking three-dimensional tree models in Java3D.

Artistic Works

- 2023 Salon Stolz, Graz, VRVis
3D-Scan, Design and Production of a tactile relief of 5 personal belongings of the composer: glasses, bag, tail coat, baton, sheet of music; including description in raised font and Braille.
- 2023 Gerda and Martin Essl, “Corona-Monument of Hope at Heldenplatz”, VRVis
Design and Production of a tactile relief (including description in UV print and Braille) of a photograph by Barbara Essl of the Corona-Monument by Emmerich Weissenberger.
- 2019 Graz Museum Schlossberg, “Tactile Panorama”, VRVis
Design and Production of a large-scale tactile Panorama of the view from Schlossberg
- 2019 “ARCHES”, VRVis
Design and Production of 6 Tactile Reliefs and content for Tactile Multimedia Guide
- Frans Hals, Laughing Cavalier, 1624
- Giovanni Antonio Boltraffio, El Salvador adolescente, ca. 1490-1495
- Aurelio Suárez, Noche de frio espeso, 1954
- Edward Hopper, Hotel Room, 1931
- Pieter Bruegel the Elder, Bauer und Vogeldieb, 1568
- Joachim Kändler, Meissen Table Fountain, 1745-1747 (based on 3D scan)
- 2019 NÖ Landesausstellung 2019, VRVis. Design and Production of two Tactile Reliefs
- Portrait “Maximilian I”, after Bernhard Strigel, after 1507.
- Lid of the tomb of Emperor Friedrich III (flattened relief from 3D scan)
- 2019 Haus der Bayerischen Geschichte, VRVis.
Design of seven Tactile Reliefs for the new permanent exhibition
- Portrait Maximilian I, Photo “Liesl Karlstadt and Karl Valentin”, Photo “Brett vorm Kopf”
- and 4 stylized works: promotional sign “Schmied von KocheI”,
Plan of 4-sided courtyard, propaganda poster, Olympia Pictograms
- 2018 Dommuseum Wien, VRVis. Design and Production of two Tactile Reliefs:
- Portrait Rudolf IV (around 1365)
- Part of Arabic inscription on burial cloth of Rudolf IV
- 2016 “AMBAVis”, VRVis.
Interpretation of Gustav-Klimt, Der Kuss, 1908/09 (in permanent exhibition)
including Interactive Audio Guide
5 Relief-Printer Medium Prototypes, the largest made from 31500 spaghetti pieces
Video-Documentation
- 2013 “Wien/Berlin”, VRVis.
Interpretation of two paintings into Tactile Reliefs
for the exhibition “Wien/Berlin” of Berlinische Galerie, Berlin:
- Rudolf Schlichter, Sitzende Jenny, 1922/23
- Rudolf Wacker, Stilleben mit Kistendeckel, 1930
- 2011 “Tactile Exhibits”, VRVis.
Concept, design and production of exhibits according to the design-for-all principle:
Design and production of tactile reliefs of 3 types of knives based on laser scans.
Design of a 1:50 model of the exhibition space and surrounding architecture.
Design and production of a 1:50 model of 3 heavy industry devices based on photographs.
- 2010 “Tactile Paintings”, VRVis.
Interpretation of three paintings into Textured Reliefs
for the permanent exhibition of Kunsthistorisches Museum:
- Raffael, “Madonna of the Meadow”, 1505 or 1506. (full + close-up of background)
- Jean Fouquet, “Portrait of the Ferrara Court Jester Gonella”, around 1445.

- Albrecht Dürer, "Virgin Mary with Child", dated 1512.
- 2002 "Claustratum", FH-Hagenberg.
Short film, 5min. 16:9, Dolby Digital 5.1
- 2002 "Papilio – Schmetterlinge für Studierstube", FH-Hagenberg.
Simulation of a flock of Butterflies with user interaction for the virtual reality framework Studierstube (<http://www.studierstube.org>) in C++/OpenInventor and Java3D
- 2001 "Duplo ein virtuelles Legospiel", FH-Hagenberg.
Virtual reality installation for the creation of virtual "Lego" brick buildings with 3D joystick and stereo headset.
- 2000 "Spherical Panorama Viewer Applet in JAVA 1.1", FH-Hagenberg.
Offers additional navigation possibilities on websites, by navigating in animated spherical panoramic images of real-world locations.

Awards

- *Universal Design Award 2023*, winner of all 3 Awards: Gold, Expert and Consumer for *Panorama Graz*
- *WSA World Summit Award Austria 2023*, Winner in Category "Culture & Heritage"
- *IIID Award 2023*: Winner in Category "Universal Design" with *Tactile Panorama Graz*
- *IÖB Challenge 2023*: Winner solution for challenge "*Digitales Interaktives Ausstellungsarchiv*"
- Winner of *Heritage in Motion Award 2020* in Category App with "Please Touch! An inclusive art experience powered by ARCHES"
- Winner of *WSA Austria Award 2020* in Inclusion & Empowerment with project *ARCHES*
- Shortlisted at *Global WSA World Summit Award 2020* with project *ARCHES*
- Finalist at *Horizon Impact Award 2020* with project *ARCHES*
- *eAward 2020* Auszeichnung in Soziale Verantwortung for project *ARCHES*
- *Zero Project Award 2020*, Winner for project *ARCHES*
- *IIID Award 2020*, Bronze Award in Social Affairs and Darling Project of jury member Kyoto Kaneda
- Nomination at *eAward 2019* for "*Taktiler Multimedia-Guide für Kunstwerke*"
- Jury-Award at *Multimedia Staatspreis 2011/Innovationspreis* for project "*Tactile Paintings*"
- Finalist in the *Design for All Foundation Awards 2012*
- *MTD-Gala Award 2002*, Category Video, Best short film "Claustratum".

Publications/Presentations/Talks

- [1] **C. Travnicek, D. Stoll, A. Reichinger, J. Rix.** "It soon became clear – insights into technology and participation" *Qualitative Research Journal* 22 (2), 2021, 129-142.
- [2] **A. Reichinger, et al.** "Pictures in your mind: using interactive gesture-controlled reliefs to explore art" *ACM Transactions on Accessible Computing (TACCESS)* 11 (1), Article 2 (April 2018), 39 pages.
- [3] **A. Reichinger, H.G. Carrizosa, C. Travnicek.** "Designing an Interactive Tactile Relief of the Meissen Table Fountain. In: K. Miesenberger, G. Kouroupetroglou (eds) *Computers Helping People with Special Needs*. Volume 10897 of LNCS. Springer, Cham 2018, pp. 209-216.
- [4] **A. Reichinger, S. Maierhofer, A. Fuhrmann, W. Purgathofer.** "Gesture-Based Interactive Audio Guide on Tactile Reliefs". In: *Proceedings of the 18th International ACM SIGACCESS Conference on Computers & Accessibility. ASSETS '16*. ACM, NY, USA, 2016, pp. 91-100.
- [5] **A. Reichinger, S. Schröder, C. Löw, S. Sportun, P. Reichl, W. Purgathofer.** "Spaghetti, Sink and Sarcophagus. Design Explorations of Tactile Art-works for Visually Impaired People". In: *Proc. of the 9th Nordic Conference on Human-Computer Interaction. NordiCHI '16*. 2016, Article No. 82.
- [6] **A. Reichinger, A. Fuhrmann, S. Maierhofer, W. Purgathofer.** "A Concept for Re-Usable Interactive Tactile Reliefs". In: K. Miesenberger, C. Bühler, and P. Penaz, eds.: *Computers Helping People with Special Needs, Part II*. Volume 9759 of LNCS. Springer, Heidelberg 2016, pp. 108–115.
- [7] **M. Neumüller, A. Reichinger, F. Rist, C. Kern.** "3D Printing for Cultural Heritage: Preservation, Accessibility, Research and Education". In M. Ioannides, E. Quak eds.: *3D Research Challenges in Cultural Heritage*. Volume 8355 of Lecture Notes in Computer Science. Springer 2014.
- [8] **A. Reichinger, P. Majdak, R. Sablatnig, S. Maierhofer.** "Evaluation of Methods for Optical 3-D Scanning of Human Pinnae". In *Int. Conference on 3D Vision*, 2013, pp. 390-397.

- [9] **H. Ziegelwanger, A. Reichinger, and P. Majdak.** "Calculation of listener-specific head-related transfer functions: Effect of mesh quality". In Proc. 21st Int. Congress on Acoustics, ICA 2013, Montréal, 2013.
- [10] **M. Neumüller, A. Reichinger.** "From Stereoscapy to Tactile Photography". In PhotoResearcher No 19, Wien, April 2013, pp. 59-63.
- [11] **A. Reichinger, M. Neumüller, F. Rist, S. Maierhofer, W. Purgathofer.** "Computer-Aided Design of Tactile Models - Taxonomy and Case Studies". In Miesenberger, K., Karshmer, A., Penaz, P., Zagler, W., eds.: Computers Helping People with Special Needs, Part II. Volume 7383 of Lecture Notes in Computer Science. Springer Berlin / Heidelberg 2012, pp. 497-504.
- [12] **A. Reichinger, S. Maierhofer, and W. Purgathofer.** "High-Quality Tactile Paintings". ACM J. Comput. Cult. Herit. 4 (2), Article 5 (November 2011), 13 pages.
- [13] **A. Reichinger, S. Maierhofer, W. Purgathofer.** "High-Quality Tactile Paintings". In Eurographics 2011 Area Papers, April 2011.
- [14] **A. Reichinger.** "Gallery Paintings for Blind and Visually Impaired People", Talk at SpaceX—An Exchange Forum on Information Design for Visually Impaired People, Vienna, October 25-26, 2010.
- [15] **I. Reisner-Kollmann, A. Reichinger, and W. Purgathofer.** "3D Camera Pose Estimation using Line Correspondences and 1D Homographies". In Advances in Visual Computing: 6th International Symposium on Visual Computing (ISVC 2010), Part II, pp. 41-52.
- [16] **A. Reichinger, S. Maierhofer, R. F. Tobler.** "Skylight illumination and rendering of urban scenes". In Proc. CORP (International symposium on information and communication technologies in urban and spatial planning), Feb. 2006.

Refereeing

- ACM Transactions on Accessible Computing (TACCESS)
- EUROGRAPHICS (Annual Conference of the European Association for Computer Graphics)
- 3DPVT (International Symposium 3D Data Processing, Visualization and Transmission)
- IEEE Transactions on Instrumentation & Measurement
- WSCG (Int. Conferences in Central Europe on Computer Graphics, Visualization and Computer Vision)
- JCH (Journal of Cultural Heritage)
- IEEE TIM (Transactions on Instrumentation and Measurement)