Stanford

Gabriel Mistelbauer

Senior Research Engineer, Rad/Cardiovascular Imaging

Bio

BIO

Gabriel Mistelbauer is a senior research engineer in the Department of Radiology, Stanford University School of Medicine, Stanford, CA, USA, since 2022. Previously, he was a research associate at the Otto-von-Guericke University Magdeburg, Germany (2016-2022) and a postdoctoral researcher at TU Wien, Austria (2013-2016). He received a PhD in Computer Science, in the field of Medical Visualization, in 2013 at TU Wien, Austria, and the habilitation (venia legendi) in Computer Visualization (Computervisualistik) in 2024 at Otto-von-Guericke University Magdeburg, Germany. His research focuses on visual computing and image processing in medicine, in particular on the analysis of vascular structures.

HONORS AND AWARDS

- Dirk Bartz Prize for Visual Computing in Medicine and Life Sciences (3rd place), Eurographics Medical Prize - Eurographics Conference on Visualization (2023)
- Best Short Paper Award, Eurographics Workshop on Visual Computing for Biology and Medicine (2021)
- Image Award (People's Choice), Eurographics Workshop on Visual Computing for Biology and Medicine (2019)
- Best Short Paper Award, Eurographics Workshop on Visual Computing for Biology and Medicine (2018)
- Best Paper Award, Spring Conference on Computer Graphics (2017)
- Honorable Mention - Best Paper Award, IEEE PacificVis (2017)
- Honorable Mention - Best Paper Award, Eurographics Workshop on Visual Computing for Biology and Medicine (2015)
- Honorable Mention - Doctoral Dissertation Award, IEEE VGTC VPG doctoral dissertation award (2015)

EDUCATION AND CERTIFICATIONS

- Private Lecturer (PD), Otto-von-Guericke University Magdeburg , Computer Visualization (Computervisualistik) (2024)
- Dr.techn.habil., Otto-von-Guericke University Magdeburg , Computer Visualization (Computervisualistik) (2024)
- PhD (Dr.techn.), TU Wien , Medical Visualization (2013)
- MSc (Dipl.-Ing.), TU Wien , Visual Computing (2010)
- BSc (Bakk.techn.), TU Wien , Media Informatics and Visual Computing (2007)

LINKS

- AngioVis Software: https://angiovis.gitlab.io/webpage/

Professional

PROFESSIONAL INTERESTS

- research design and clinical integration

- visual computing, medical visualization, computer graphics

- image processing, medical image processing, machine learning, artificial intelligence

- medical-grade software engineering

WORK EXPERIENCE

- Research Associate - Otto-von-Guericke University Magdeburg, Department of Simulation and Graphics (2016 - 2022)
- Postdoctoral Researcher - TU Wien, Institute of Visual Computing & Human-Centered Technology (2013 - 2016)
- PhD Student - TU Wien, Institute of Visual Computing & Human-Centered Technology (2010 - 2013)

Publications

PUBLICATIONS

- **Automated cross-sectional view selection in CT angiography of aortic dissections with uncertainty awareness and retrospective clinical annotations.** *Computers in biology and medicine*
  Pepe, A., Egger, J., Codari, M., Willemink, M. J., Gsaxner, C., Li, J., Roth, P. M., Schmalstieg, D., Mistelbauer, G., Fleischmann, D.
  2023; 165: 107365

- **Implicit Modeling of Patient-Specific Aortic Dissections with Elliptic Fourier Descriptors** *COMPUTER GRAPHICS FORUM*
  Mistelbauer, G., Rossl, C., Baeumler, K., Preim, B., Fleischmann, D.
  2021; 40 (3): 423-434

- **Semi-automatic vessel detection for challenging cases of peripheral arterial disease.** *Computers in biology and medicine*
  Mistelbauer, G., Morar, A., Schernthaner, R., Strassl, A., Fleischmann, D., Moldoveanu, F., Groller, M. E.
  2021; 133: 104344

- **CT-based True- and False-Lumen Segmentation in Type B Aortic Dissection Using Machine Learning.** *Radiology. Cardiothoracic imaging*
  Hahn, L. D., Mistelbauer, G., Higashigaito, K., Koci, M., Willemink, M. J., Sailer, A. M., Fischbein, M., Fleischmann, D.
  2020; 2 (3): e190179

- **Popup-Plots: Warping Temporal Data Visualization** *IEEE TRANSACTIONS ON VISUALIZATION AND COMPUTER GRAPHICS*
  Schmidt, J., Fleischmann, D., Preim, B., Braendle, N., Mistelbauer, G.
  2019; 25 (7): 2443–57

- **AR in VR: assessing surgical augmented reality visualizations in a steerable virtual reality environment** *INTERNATIONAL JOURNAL OF COMPUTER ASSISTED RADIOLOGY AND SURGERY*
  Hettig, J., Engelhardt, S., Hansen, C., Mistelbauer, G.
  2018; 13 (11): 1717-1725

- **Quantitative metrics of the LV trabeculated layer by cardiac CT and cardiac MRI in patients with suspected noncompaction cardiomyopathy.** *European radiology*
  Manohar, A., Vigneault, D. M., Kwon, D. H., Caliskan, K., Budde, R. P., Hirsch, A., Lee, S. P., Lee, W., Owens, A., Litt, H., Haddad, F., Mistelbauer, G., Wheeler, et al
  2023

- **Artificial Intelligence Applications in Aortic Dissection Imaging.** *Seminars in roentgenology*
  Mastrodicasa, D., Codari, M., Bäumler, K., Sandfort, V., Shen, J., Mistelbauer, G., Hahn, L. D., Turner, V. L., Desjardins, B., Willemink, M. J., Fleischmann, D.
  2022; 57 (4): 357-363

- **Inter-observer variability of expert-derived morphologic risk predictors in aortic dissection.** *European radiology*

Willemink, M. J., Mastrodicasa, D., Madani, M. H., Codari, M., Chepelev, L. L., Mistelbauer, G., Hanneman, K., Ouzounian, M., Ocazionez, D., Afifi, R. O., Lacomis, J. M., Lovato, L., Pacini, et al
2022

- **Deep Learning-Based 3D Segmentation of True Lumen, False Lumen, and False Lumen Thrombosis in Type-B Aortic Dissection.** *Annual International Conference of the IEEE Engineering in Medicine and Biology Society. IEEE Engineering in Medicine and Biology Society. Annual International Conference*
  Wobben, L. D., Codari, M., Mistelbauer, G., Pepe, A., Higashigaito, K., Hahn, L. D., Mastrodicasa, D., Turner, V. L., Hinostroza, V., Baumler, K., Fischbein, M. P., Fleischmann, D., Willemink, et al
  2021; 2021: 3912-3915

- **Visual Analytics in Dental Aesthetics**
  Amirkhanov, A., Bernhard, M., Karimov, A., Stiller, S., Geier, A., Groller, M., Mistelbauer, G.
  WILEY.2020: 635-646

- **Single-stage bone resection and cranioplastic reconstruction: comparison of a novel software-derived PEEK workflow with the standard reconstructive method** *INTERNATIONAL JOURNAL OF ORAL AND MAXILLOFACIAL SURGERY*
  Dodier, P., Winter, F., Auzinger, T., Mistelbauer, G., Frischer, J. M., Wang, W., Mallouhi, A., Marik, W., Wolfsberger, S., Reissig, L., Hammadi, F., Matula, C., Baumann, et al
  2020; 49 (8): 1007-1015

- **Knowledge-Assisted Comparative Assessment of Breast Cancer using Dynamic Contrast-Enhanced Magnetic Resonance Imaging** *COMPUTER GRAPHICS FORUM*
  Nie, K., Baltzer, P., Preim, B., Mistelbauer, G.
  2020; 39 (3): 13-23

- **Augmenting Node-Link Diagrams with Topographic Attribute Maps** *COMPUTER GRAPHICS FORUM*
  Preiner, R., Schmidt, J., Kroesl, K., Schreck, T., Mistelbauer, G.
  2020; 39 (3): 369-381

- **Novel Software-Derived Workflow in Extracranial-Intracranial Bypass Surgery Validated by Transdural Indocyanine Green Videoangiography** *WORLD NEUROSURGERY*
  Dodier, P., Auzinger, T., Mistelbauer, G., Wang, W., Ferraz-Leite, H., Gruber, A., Marik, W., Winter, F., Fischer, G., Frischer, J. M., Bavinzski, G.
  2020; 134: E892-E902

- **Fluid-structure interaction simulations of patient-specific aortic dissection.** *Biomechanics and modeling in mechanobiology*
  Baumler, K., Vedula, V., Sailer, A. M., Seo, J., Chiu, P., Mistelbauer, G., Chan, F. P., Fischbein, M. P., Marsden, A. L., Fleischmann, D.
  2020

- **ManyLands: A Journey Across 4D Phase Space of Trajectories** *COMPUTER GRAPHICS FORUM*
  Amirkhanov, A., Kosiuk, I., Szmolyan, P., Amirkhanov, A., Mistelbauer, G., Groeller, M., Raidou, R. G.
  2019; 38 (7): 191-202

- **A Survey of Flattening-Based Medical Visualization Techniques**
  Kreiser, J., Meuschke, M., Mistelbauer, G., Preim, B., Ropinski, T.
  WILEY.2018: 597-624

- **Multipath Curved Planar Reformations of Peripheral CT Angiography: Diagnostic Accuracy and Time Efficiency** *CARDIOVASCULAR AND INTERVENTIONAL RADIOLOGY*
  Schreiner, M. M., Platzgummer, H., Unterhumer, S., Weber, M., Mistelbauer, G., Groeller, E., Loewe, C., Schernthaner, R. E.
  2018; 41 (5): 718-725

- **Data-sensitive visual navigation**
  Mindek, P., Mistelbauer, G., Groeller, E., Bruckner, S.
  PERGAMON-ELSEVIER SCIENCE LTD.2017: 77-85

- **Visual Quantification of the Circle of Willis: An Automated Identification and Standardized Representation** *COMPUTER GRAPHICS FORUM*
  Miao, H., Mistelbauer, G., Nasel, C., Groeller, M. E.
  2017; 36 (6): 393-404

- **A BMI-adjusted ultra-low-dose CT angiography protocol for the peripheral arteries-Image quality, diagnostic accuracy and radiation exposure** *EUROPEAN JOURNAL OF RADIOLOGY*

Schreiner, M. M., Platzgummer, H., Unterhumer, S., Weber, M., Mistelbauer, G., Loewe, C., Schernthaner, R. E.
2017; 93: 149-156

- **Placenta Maps: In Utero Placental Health Assessment of the Human Fetus**
  Miao, H., Mistelbauer, G., Karimov, A., Alansary, A., Davidson, A., Lloyd, D. F. A., Damodaram, M., Story, L., Hutter, J., Hajnal, J. V., Rutherford, M., Preim, B., Kainz, et al
  IEEE COMPUTER SOC.2017: 1612-1623

- **Computed Tomography Imaging Features in Acute Uncomplicated Stanford Type-B Aortic Dissection Predict Late Adverse Events** *CIRCULATION-CARDIOVASCULAR IMAGING*
  Sailer, A. M., Van Kuijk, S. M., Nelemans, P. J., Chin, A. S., Kino, A., Huininga, M., Schmidt, J., Mistelbauer, G., Baeumler, K., Chiu, P., Fischbein, M. P., Dake, M. D., Miller, et al
  2017; 10 (4)

- **New hybrid reformations of peripheral CT angiography: do we still need axial images?** *CLINICAL IMAGING*
  Schernthaner, R., Wolf, F., Mistelbauer, G., Weber, M., Sramek, M., Groeller, E., Loewe, C.
  2015; 39 (4): 603-607

- **Guided Volume Editing based on Histogram Dissimilarity** *COMPUTER GRAPHICS FORUM*
  Karimov, A., Mistelbauer, G., Auzinger, T., Bruckner, S.
  2015; 34 (3): 91-100

- **Vessel Visualization using Curved Surface Reformation**
  Auzinger, T., Mistelbauer, G., Baclija, I., Schernthaner, R., Koechl, A., Wimmer, M., Groeller, M., Bruckner, S.
  IEEE COMPUTER SOC.2013: 2858-2867

- **Vessel Visualization using Curvicircular Feature Aggregation** *COMPUTER GRAPHICS FORUM*
  Mistelbauer, G., Morar, A., Varchola, A., Schernthaner, R., Baclija, I., Koechl, A., Kanitsar, A., Bruckner, S., Groeller, E.
  2013; 32 (3): 231-240

- **ViviSection: Skeleton-based Volume Editing** *COMPUTER GRAPHICS FORUM*
  Karimov, A., Mistelbauer, G., Schmidt, J., Mindek, P., Schmidt, E., Sharipov, T., Bruckner, S., Groeller, E.
  2013; 32 (3): 461-470

- **Centerline Reformations of Complex Vascular Structures** *5th IEEE Pacific Visualization Symposium*
  Mistelbauer, G., Varchola, A., Bouzari, H., Starinsky, J., Koechl, A., Schernthaner, R., Fleischmann, D., Groeller, M. E., Sramek, M.
  IEEE COMPUTER SOC.2012: 233–240

- **Smart Super Views - A Knowledge-Assisted Interface for Medical Visualization**
  Mistelbauer, G., Bouzari, H., Schernthaner, R., Baclija, I., Koechl, A., Bruckner, S., Sramek, M., Groeller, M.
  edited by Santucci, G., Ward, M.
  IEEE.2012: 163-172