

# Matthias Miller

## Curriculum Vitae

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## Personal Information

Place and Date of Birth 74078 Heilbronn-Neckargartach  
22.09.1992  
Address Uhlandstraße 4, 78464 Konstanz

## Education

- 2018–2022 **PhD Student and Research Associate**, *Data Analysis & Visualization*, University of Konstanz.  
Working Title: Visual Sheet Music Analysis.  
Supervisors: Prof. Dr. Daniel Keim, Prof. Dr. Michael Grossniklaus.  
Estimated date for Ph.D. defense: 31.03.2023.
- 2016–2018 **Master of Computer and Information Science**, University of Konstanz, GPA: 1.2  
Thesis: “Visual Analytics of Spatio-Temporal Event Predictions: Investigating Causes for Urban Heat Islands” (1.3).  
Reviewers: Prof. Dr. Daniel A. Keim, Prof. Dr. Bela Gipp.
- 2011–2016 **Bachelor of Computer Science**, University of Konstanz, GPA: 1.7  
Thesis: “Collaborative Object Positioning in Physically Separate Mixed Reality Environments” (1.3).  
Reviewers: Prof. Dr. Daniel A. Keim, Prof. Dr. Harald Reiterer.
- 2002–2011 **Abitur**, Hölderlin Gymnasium, 74348, Lauffen am Neckar, GPA: 2.1.

## Publications

- 2022 W. Jentner, F. Sperrle, D. Seebacher, M. Kraus, R. Sevastjanova, M. T. Fischer, U. Schlegel, D. Streeb, **M. Miller**, T. Spinner, E. Cakmak, M. Sharinghousen, P. Meschenmoser, J. Görtler, O. Deussen, F. Stoffel, H. Kabitz, D. A. Keim, M. El-Assady, J. Buchmüller. **Visualisierung der COVID-19-Inzidenzen und Behandlungskapazitäten mit CoronaVis**. In: Resilienz und Pandemie: Handlungsempfehlungen anhand von Erfahrungen mit COVID-19, *Kohlhammer*, 2022.
- 2022 M. T. Fischer, S. D. Hirsbrunner, W. Jentner, **M. Miller**, D. A. Keim, P. Helm. **Promoting Ethical Awareness in Communication Analysis: Investigating Potentials and Limits of Visual Analytics for Intelligence Applications**. *Proc. of the ACM Conf. on Fairness, Accountability, and Transparency, 2022*, DOI: 10.1145/3531146.3533151.
- 2022 **M. Miller**, J. Rauscher, D. A. Keim, M. El-Assady. **CorpusVis: Visual Analysis of Digital Sheet Music Collections**. *Computer Graphics Forum, 2022*, DOI: 10.1111/cgf.14436. <https://visual-musicology.com/corpus>.
- 2022 **M. Miller**, D. Fürst, H. Hauptmann, D. A. Keim, M. El-Assady. **Augmenting Digital Sheet Music through Visual Analytics**. *Computer Graphics Forum, 2022*, DOI: 10.1111/cgf.14436. <https://visual-musicology.com/sheetmusicvis>.
- 2021 **M. Miller** and D. Miller. **GraphStateVis: Interactive Visual Analysis of Qubit Graph States and their Stabilizer Groups**. *IEEE International Conference on Quantum Computing and Engineering (QCE), 2021*, DOI: QCE52317.2021.00057.
- 2020 M. Kraus, T. Pollok, **M. Miller**, T. Kilian, T. Moritz, D. Schweitzer, J. Beyerer, D. A. Keim, C. Qu, W. Jentner. **Toward Mass Video Data Analysis: Interactive and Immersive 4D Scene Reconstruction**. *Sensors; Special Issue Selected Papers from the Int. Conf. on Imaging for Crime Detection and Prevention (ICDP-19), 2020*, DOI: 10.3390/s20185426.
- 2020 D. Fürst, **M. Miller**, D. A. Keim, A. Bonnici, H. Schäfer, M. El-Assady. **Augmenting Sheet Music with Rhythmic Fingerprints**. *Proc. of the Workshop on Visualization for the Digital Humanities (VIS4DH) at IEEE VIS 2020*, DOI: 10.1109/VIS4DH51463.2020.00007.
- 2020 M. Kraus, **M. Miller**, J. Buchmüller, M. Stein, N. Weiler, D. A. Keim, M. El-Assady. **Breaking the Curse of Visual Analytics: Accommodating Virtual Reality in the Visualization Pipeline**. In *Computer Vision, Imaging and Computer Graphics Theory and Applications. Communications in Computer and Information Science, volume 1182*. Springer, Cham., 2020, DOI: 10.1007/978-3-030-41590-7\_11.
- 2019 **M. Miller**, H. Schäfer, M. Kraus, M. Leman, D. Keim and M. El-Assady. **Framing Visual Musicology through Methodology Transfer**. *Proc. of the Workshop on Visualization for the Digital Humanities (VIS4DH) at IEEE VIS 2019*.
- 2019 **M. Miller**, A. Bonnici and M. El-Assady. **Augmenting Music Sheets with Harmonic Fingerprints (Best Paper Award)**. *DocEng '19: Proc. of the ACM Symposium on Document Engineering 2019*, DOI: 10.1145/3342558.3345395
- 2019 **M. Miller**, H. Schäfer, A. Bonnici and M. El-Assady. **Visual Pattern Analysis using Digital Sheet Music**. *Late Breaking/Demos of the Intl. Conf. on Music Information Retrieval (ISMIR), 2019*.

- 2019 J. Fuchs, P. Isenberg, A. Bezerianos, **M. Miller** and D. Keim. **EduClust - A Visualization Application for Teaching Clustering Algorithms**. *IEEE Computer Graphics and Applications*, DOI: 10.2312/eged20191023 | WebApp
- 2019 D. Seebacher, **M. Miller**, T. Polk, J. Fuchs and D. Keim. **Visual Analytics of Volunteered Geographic Information: Detection and Investigation of Urban Heat Islands**. *IEEE Computer Graphics and Applications*, DOI: 10.1109/MCG.2019.2926242
- 2019 **M. Miller**, X. Zhang, J. Fuchs and M. Blumenschein. **Evaluating Ordering Strategies of Star Glyph Axes**. *Proc. of the IEEE Visualization Conf. (VIS); 91–95 (2019)*, DOI: 10.1109/VISUAL.2019.8933656
- 2019 T. Pollok, M. Kraus, C. Qu, **M. Miller**, T. Moritz, T. Kilian, D. Keim and W. Jentner. **Computer Vision Meets Visual Analytics: Enabling 4D Crime Scene Investigation from Image and Video Data**. *Int. Conf. on Imaging for Crime Detection and Prevention, 2019*.
- 2018 D. Seebacher, **M. Miller**, T. Polk, J. Fuchs and D. Keim. **Visual Analytics of Volunteered Geographic Information: Detection and Investigation of Urban Heat Islands**. *Symposium on Visualization in Data Science at IEEE VIS 2018*.
- 2018 **M. Miller**, J. Häußler, M. Kraus, D. Keim, and M. El-Assady. **Analyzing Visual Mappings of Traditional and Alternative Music Notation**. *Proc. of the Workshop on Visualization for the Digital Humanities (VIS4DH) at IEEE VIS 2018*.
- 2018 E. Cakmak, U. Schlegel, **M. Miller**, J. Buchmüller, W. Jentner and D. Keim. **Interactive Classification Using Spectrograms and Audio Glyphs**. *IEEE Conf. on Visual Analytics Science and Technology (VAST Challenge)*, DOI: 10.1109/VAST.2018.8802500

## Language Skills

German	Mother tongue	
English	Full Professional Proficiency	(C2 Level)
French	Elementary Proficiency	(A1 Level)
Spanish	Elementary Proficiency	(A1 Level)
Russian	Limited Working Proficiency	(A2 Level)

## Programming Skills

Advanced	JavaScript, Python, C#, Java, PostgreSQL, MySQL, TypeScript, Web Programming, L <sup>A</sup> T <sub>E</sub> X
Intermediate	PHP, Haskell, R
Basic	Ruby on Rails, Matlab, C, C++

## Other Interests

Hobbies	Traveling, Reading, Technology
Sports	Skiing, Swimming, Mountainbiking
Music	Piano, Acoustic & Electric Guitar, Accordion, Singing