

# David Kouřil

david.kouril@gmail.com | [davidkouril.com](http://davidkouril.com) | [in](#) LinkedIn | [Google Scholar](#)

## RESEARCH INTERESTS

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Interactive data visualization for science outreach and storytelling  
Visualization of spatial biomedical data  
Design and development of composable data visualization tools

## RESEARCH EXPERIENCE

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### Postdoctoral Research Fellow

Harvard Medical School

Advisor: [Prof. Nils Gehlenborg](#)

Jul 2023 - Present

Boston, MA, USA

### Postdoctoral Researcher

Masaryk University

Advisor: [Prof. Barbora Kozlíková](#)

Jul 2021 - Jun 2023

Brno, Czech Republic

### Project Assistant

TU Wien

Advisor: [Prof. Ivan Viola](#)

Jul 2016 - Feb 2021

Vienna, Austria

## EDUCATION

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### Doctoral Degree (Dr.techn.) from TU Wien

Thesis: "Interactive Visualization of Dense and Multi-Scale Data for Science Outreach"

2021

Vienna, Austria

### Master's Degree (Mgr.) from Masaryk University

Thesis: "Maya2CellVIEW: Integrated Tool for Creating Large and Complex Molecular Scenes"

2017

Brno, Czech Republic

### Bachelor's Degree (Bc.) from Masaryk University

Thesis: "Fast region labeling of binary images"

2014

Brno, Czech Republic

## AWARDS

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### Best Paper Honorable Mention (SciVis) at IEEE Vis

2018

### Best PhD Award at EuroVis

2022

## PUBLICATIONS

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### Peer-Reviewed Journal Publications

"Design Space and Declarative Grammar for 3D Genomic Data Visualization",

**D. Kouřil**, T. Manz, S. L'Yi, N. Gehlenborg

*IEEE Transactions on Visualization and Computer Graphics* 32(1):890-900, 2026.

[10.1109/TVCG.2025.3634654](https://doi.org/10.1109/TVCG.2025.3634654)

"Uchimata: a toolkit for visualization of 3D genome structures on the web and in computational notebooks",

**D. Kouřil**, T. Manz, T. Clarence, N. Gehlenborg

*Bioinformatics* 42(2):btag035, 2026.

[10.1093/bioinformatics/btag035](https://doi.org/10.1093/bioinformatics/btag035)

"The challenge of chromatin model comparison and validation—a project from the first international 4D Nucleome Hackathon",

J. Kubica, S. Korsak, K. H. Banecki, D. Schirman, A. D. Yadavalli, A. B. Clerkin, **D. Kouřil**, M. Kadlof, B. Busby, D. Plewczynski

*PLOS Computational Biology* 21(8):e1013358, 2025.

[10.1371/journal.pcbi.1013358](https://doi.org/10.1371/journal.pcbi.1013358)

"Virtual reality inspection of chromatin 3D and 2D data",

E. Molina, **D. Kouřil**, T. Isenberg, B. Kozlíková, P.-P. Vázquez

*Computers & Graphics*, 2024.

<https://doi.org/10.1016/j.cag.2024.104059>

"Multiscale Unfolding: Illustratively Visualizing the Whole Genome at a Glance",  
S. Halladjian, **D. Kouřil**, H. Miao, M. E. Gröller, I. Viola, T. Isenberg  
*IEEE Transactions on Visualization and Computer Graphics* 28(1):3456-3470, 2022.  
[10.1109/TVCG.2021.3065443](https://doi.org/10.1109/TVCG.2021.3065443)

"HyperLabels: Browsing of Dense and Hierarchical Molecular 3D Models",  
**D. Kouřil**, T. Isenberg, B. Kozlíková, M. Meyer, M. E. Gröller, I. Viola  
*IEEE Transactions on Visualization and Computer Graphics* 27(1):3493-3504, 2021.  
[10.1109/TVCG.2020.2975583](https://doi.org/10.1109/TVCG.2020.2975583)

"Visualization working group at TU Wien: Visible Facimus Quod Ceteri Non Possunt",  
H.-Y. Wu, A. Amirkhanov, N. Grossmann, T. Klein, **D. Kouřil**, H. Miao, L. R. Luidolt, P. Mindek, R. G. Raidou, I. Viola, M. Waldner, M. E. Gröller  
*Journal of Visual Informatics* 5(1):76-84, 2021.  
[10.1016/j.visinf.2021.02.003](https://doi.org/10.1016/j.visinf.2021.02.003)

"Molecumentary: Adaptable Narrated Documentaries Using Molecular Visualization",  
**D. Kouřil**, O. Strnad, P. Mindek, S. Halladjian, T. Isenberg, M. E. Gröller, I. Viola  
*IEEE Transactions on Visualization and Computer Graphics* 29(1):1733-1747, 2021.  
[10.1109/TVCG.2021.3130670](https://doi.org/10.1109/TVCG.2021.3130670)

"Nanutilus: Generator of Immersive Guided-Tours in Crowded 3D Environment",  
R. Alharbi, O. Strnad, L. R. Luidolt, M. Waldner, **D. Kouřil**, C. Bohak, T. Klein, E. Gröller, I. Viola  
*IEEE Transactions on Visualization and Computer Graphics* 29(1):1860-1875, 2021.  
[10.1109/TVCG.2021.3133592](https://doi.org/10.1109/TVCG.2021.3133592)

"ScaleTrotter: Illustrative Visual Travels Across Negative Scales",  
S. Halladjian, H. Miao, **D. Kouřil**, M. E. Gröller, I. Viola, T. Isenberg  
*IEEE Transactions on Visualization and Computer Graphics* 26(1):654-664, 2020.  
[10.1109/TVCG.2019.2934334](https://doi.org/10.1109/TVCG.2019.2934334)

"Labels on Levels: Labeling of Multi-Scale Multi-Instance and Crowded 3D Biological Environments",  
**D. Kouřil**, L. Čmolík, B. Kozlíková, H.-Y. Wu, G. Johnson, D. Goodsell, A. Olson, M. E. Gröller, I. Viola  
*IEEE Transactions on Visualization and Computer Graphics* 25(1):977-986, 2019.  
[10.1109/TVCG.2018.2864491](https://doi.org/10.1109/TVCG.2018.2864491)

"Multiscale Molecular Visualization",  
H. Miao, T. Klein, **D. Kouřil**, P. Mindek, K. Schatz, M. E. Gröller, B. Kozlíková, T. Isenberg, I. Viola  
*Journal of Molecular Biology* 431(6):1049-1070, 2019.  
[10.1016/j.jmb.2018.09.004](https://doi.org/10.1016/j.jmb.2018.09.004)

"Visualization Multi-Pipeline for Communicating Biology",  
P. Mindek, **D. Kouřil**, J. Sorger, D. Toloudis, B. Lyons, G. Johnson, M. E. Gröller, I. Viola  
*IEEE Transactions on Visualization and Computer Graphics* 24(1):883-892, 2018.  
[10.1109/TVCG.2017.2744518](https://doi.org/10.1109/TVCG.2017.2744518)

"Semantic Screen-Space Occlusion for Multiscale Molecular Visualization",  
T. Koch, **D. Kouřil**, T. Klein, P. Mindek, I. Viola  
*Eurographics Workshop on Visual Computing for Biology and Medicine*, 2018.  
[10.2312/vcbm.20181245](https://doi.org/10.2312/vcbm.20181245)

#### Peer-Reviewed Conference Contributions, Posters

"GQVis: A Dataset of Genomics Data Questions and Visualizations for Generative AI",  
S. S. Walters, A. Valderrama, T. C. Smits, **D. Kouřil**, H. N. Nguyen, S. L'Yi, D. Lange, N. Gehlenborg  
*2025 IEEE VIS Workshop on GenAI, Agents, and the Future of VIS (VISxGenAI)*, 2025.  
[10.48550/arXiv.2510.13816](https://doi.org/10.48550/arXiv.2510.13816)

"Visualization of 3D chromatin with chromospace",  
**D. Kouřil**, T. Manz, N. Gehlenborg  
*Poster at 4DN Annual Meeting*, 2024.

#### Preprints

"Gosling Designer: a Platform to Democratize Construction and Sharing of Genomics Data Visualization Tools",  
S. L'Yi, J. Conroy, P. Misner, **D. Kouřil**, A. van den Brandt, L. Choy, N. Abdennur, N. Gehlenborg  
*arXiv*, 2025.  
[10.48550/arXiv.2510.24888](https://doi.org/10.48550/arXiv.2510.24888)

"ChromoSkein: Untangling Three-Dimensional Chromatin Fiber With a Web-Based Visualization Framework",  
M. Talčík, F. Opálený, T. Clarence, K. Furmanová, J. Byška, B. Kozlíková, **D. Kouřil**  
*arXiv*, 2022.  
[10.48550/arXiv.2211.05125](https://arxiv.org/abs/10.48550/arXiv.2211.05125)

## ACADEMIC SERVICE

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**International Program Committee**, Full Papers, *IEEE VIS* (2025, 2026)

**International Program Committee**, Journal Track, *PacificVis* (2025, 2026)

**International Program Committee**, Posters and Demos, *EuroVis* (2026)

**Reviewer**, *EuroVis* (2022, 2023, 2024, 2025, 2026), *PacificVis* (2025, 2026), *CHI* (2025), *VIS* (2020, 2021, 2022, 2023, 2024, 2025), *ISMAR* (2021), *TVCG* (2020, 2021, 2023, 2024, 2025), *C&G* (2022, 2023, 2024, 2025), *Frontiers in Bioinformatics* (2024), *BMC Bioinformatics* (2023)

**Fast Forward Chair**, *EuroVis* (2018)

**Student Volunteer**, *EuroVis* (2018)

**Presenter**, Harvard Undergraduate Research Opportunities in Science (HUROS) Fair (2023, 2024)

## TEACHING

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### Courses

**Teaching Fellow**, Data Visualization for Biomedical Applications (Spring 2024, Fall 2024), **Harvard Medical School**

**Lab Assistant**, Computer Animation (Spring 2018), **TU Wien**

**Lecturer** (Lecture on Hierarchical Animation and Motion Capture), Computer Animation (Winter 2018, 2019, 2020), **TU Wien**

**Lab Assistant**, Real-Time Visualization (Winter 2017, 2018, 2019), **TU Wien**

**Lecturer** (Lecture on Fluid Simulation and Visualization), Real-Time Visualization (Winter 2018, 2019, 2020), **TU Wien**

**Seminar Lecturer**, Computer Graphics APIs (Spring 2015), **Masaryk University**

**Assistant**, Introduction to the C language (Spring 2013, Spring 2015), **Masaryk University**

### Mentoring

**Co-Mentor**, SIBMI Summer Internship, *Skylar Walters*, **Harvard Medical School** (2025)

**Co-Mentor**, HuBMAP Summer Internship, *Arthea Valderrama*, **Harvard Medical School** (2025)

**Mentor**, Bioinformatics and Integrative Genomics (BIG) PhD program lab rotation, *Emily Hang*, **Harvard Medical School** (2024)

**Co-Mentor**, HuBMAP Summer Internship, *Aarti Darji*, **Harvard Medical School** (2024)

**Bachelor's Thesis Co-Advisor**, "Semantic Screen-Space Occlusion for Multiscale Molecular Visualization", *T. Koch*, **TU Wien** (2018)

**Bachelor's Thesis Co-Advisor**, "Molecular Dynamics using GPU skinning", *S. Haushofer*, **TU Wien** (2018)