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Comparative visual analytics for multi-modal single-cell and spatial omics data

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LIST OF PUBLICATIONS

Journal articles

- N. L. Jorstad, J. H. Song, ..., **S. Basu**, ..., E. S. Lein, B. P. F. Lelieveldt, T. Bakken. Comparative Transcriptomics Reveals Human-Specific Cortical Features. *Science*, 382.6667 (2023), article id eade9516.
- A. Vieth, T. Kroes, J. Thijssen, B. van Lew, J. Eggermont, **S. Basu**, E. Eisemann, A. Vilanova, T. Höllt, B. Lelieveldt. ManiVault: A Flexible and Extensible Visual Analytics Framework for High-Dimensional Data. *IEEE Transactions on Visualization and Computer Graphics (Proc. IEEEVis)*, 30.1 (2024), pages 175–185.

International conference proceedings

- **S. Basu**, J. Eggermont, T. Kroes, N. Jorstad, T. Bakken, E. Lein, B. Lelieveldt, T. Höllt. Cytosplore Simian Viewer: Visual Exploration for Multi-Species Single-Cell RNA Sequencing Data. *Proc. Eurographics Workshop on Visual Computing for Biology and Medicine (VCBM)*, 2023, pages 111-120.
- **S. Basu**, M. Wirthlin, J. Eggermont, T. Kroes, B. Lelieveldt, E. Lein, T. Bakken, T. Höllt. Cytosplore EvoViewer: Visual Analytics of Conserved Evolutionary Patterns in multi-species single-cell sequencing data. *Proc. IEEE Pacific Visualization Symposium (PacificVis)*, 2025, pages 149-159.

Preprint articles

- M. N. Hewitt, M. A. Turner, N. Johansen, ..., **S. Basu**, T. Höllt, C. Li, B. Lelieveldt, ..., S. C. Seeman. A cross-species spatial transcriptomic atlas of the human and non-human primate basal ganglia. *bioRxiv*, 2025.
- S. Dan, M. A. Turner, M. DeBerardine, ..., C. Li, **S. Basu**, H. Zheng, X. Liu, T. Höllt, ..., B. Lelieveldt, ..., F. M. Krienen. Spatial patterning of transcriptional and regulatory programs in the primate subcortex. *bioRxiv*, 2025.

Articles under preparation

- **S. Basu**, ..., B. Lelieveldt, T. Höllt. Cytosplore Gradient Surfer: Comparative Visual Analysis of Spatial Gene Expression Gradients Across Spatial Transcriptomics Datasets. *In progress*, 2026.

Posters

- **S. Basu**[†], C. Li[†], T. Kroes, B. Lelieveldt, B. Long, T. Höllt. Cytosplore Gradient Surfer: Comparative Visual Analysis of Spatial Gene Expression Gradients Across Datasets. *VCBM (Poster)*, 2025.

[†]Contributed equally.

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CURRICULUM VITAE

Soumyadeep Basu was born in Kolkata, West Bengal, India, on October 6, 1993. He completed his secondary education in 2010 from South Point High School, Kolkata, and his higher secondary education from Techno Model School, Kolkata. He then pursued a Bachelor of Technology in Electronics and Communication Engineering at the Institute of Engineering and Management, Kolkata, graduating in 2016.

Following his undergraduate studies, he worked as an Assistant Systems Engineer at Tata Consultancy Services Ltd. in Mumbai, India, from July 2016 to May 2018. He subsequently moved to the United States to pursue a Master of Science in Computer Science at the New Jersey Institute of Technology, Newark, which he completed in December 2019. During his master's studies, he worked on a project titled "Detecting Political Bias Trolls in Twitter Data", focusing on social media analysis to identify coordinated and biased information campaigns. He also joined Extech Ideas Inc. in July 2019 as an Applications Engineer, where he worked on building a telemedicine web application and continued in this role until August 2020. From September 2020 to July 2021, he worked as a Research Assistant at the New Jersey Institute of Technology on visual analytics for content moderation.

Building on this foundation in social media analysis, visual analytics, and applied digital health systems, he began his Ph.D. in Visual Analytics in August 2021 at Leiden University Medical Center, Leiden, the Netherlands, where his research focuses on data visualization methods for heterogeneous brain informatics resources. Since then, he has also been affiliated with the Technical University of Delft as a Researcher. His work lies at the intersection of visual analytics, human-computer interaction, and biomedical data analysis, with contributions to multiple peer-reviewed publications and international conferences.

*“Do not dwell in the past, do not dream of the future,
concentrate the mind on the present moment.”*

BUDDHA