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Exploring Interaction Design for Combining 2D Abstract Representations with 3D Representations

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Details	Location: Bât 660, Digiteo Moulon, Université Paris-Saclay, 91190, Gif-Sur-YvetteDuration: Six months, starting from March, 2020.		
Topic	We generally use 2D representations including 2D panel and 2D visualizations to control and operate the 3D. For example, in both figures below, they used 2D panel to control the 3D representations operations. However, we have a limited understanding about how to design and evaluate such interfaces with the combinations of 2D and 3D representations.		
	Thus, we have the following two research questions:		
	1. How do current researchers design interactions to connect 2D and 3D representations?		
	2. What design space could we extract from these interfaces?		
	We propose the following tasks for the prospective intern:		
	1. Literature review of related work on interfaces with both 2D and 3D representations.		
	2. Extract and summarize a design space for such combination design.		
	3. Evaluate the design space we have designed with HCI and domain experts.		
	Requirements and how to apply: We are looking for people who is interested in this topic, motivated, with fluent reading and writing in English, and with basic web developing skills. To apply, send an email to the e-mail addresses above attached with your CV.		
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[1] Jiayi Hong, Ferran Argelaguet, Alain Trubuil, and Tobias Isenberg. Design and Evaluation of Three Selection Techniques for Tightly Packed 3D Objects in Cell Lineage Specification in Botany. In Proceedings of Graphics Interface, pages 213–223, 2021. doi: 10.20380/GI2021.33

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[2] Bruno Leggio, Julien Laussu, Axel Carlier, Christophe Godin, Patrick Lemaire, Emmanuel Faure. MorphoNet: an interactive online morphological browser to explore complex multi-scale data. Nature communications. 2019 Jun 27;10(1):1-8. doi: 10.1038/s41467-019-10668-1