

FENS18

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P080-H.06 Data analysis and software - part I

**Abstract: 4587**

## **H023 - A prototypic visual analytics framework for interactive exploration of functional connectivity development**

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**Aims** Throughout life the brain undergoes a dynamic process of reorganization of intrinsic functional connectivity, which is subject of numerous studies and requires analysis of highly complex connectome data. This poses the challenge of how to visually represent these otherwise invisible brain processes in a way that slight changes can be identified while the general context is provided.

**Methods** Based on requirements resulting from analyses applying dimensionality reduction (cf. FENS poster by Frauenstein et al.) we implemented a prototypic visual analytics framework to allow for interactive exploration of individual functional connectivity in low-dimensional embedding space.

**Results** The concept of linked viewports provides reference between points in embedding space and their representation on the cortical surface (see figure).

Established visual analytics methods such as brush selection, which can be performed on both, scatterplot and surface, as well as filtering via a parallel coordinates component enable focusing on points of interest and facilitate interactive exploration of complex data to gain new insights.

**Conclusion** We believe that our novel approach, enabling visual exploration of functional connectivity development will benefit the understanding of these processes which otherwise are difficult to grasp.

*Figure: Screenshot of the framework, consisting of an embedding space viewport (1) and an anatomical surface rendering viewport (2) linked via the workspace (3). Embedding data is visualized as points in a 2D scatterplot (1.A) and as lines in a parallel coordinates representation (1.B).*