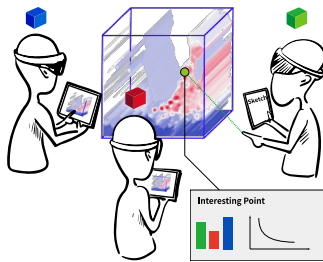


# End-of-Study 6-Months Internship

## Collaborative 3D Volumetric Selection Techniques in Augmented Reality



### Description



We propose a 6-months internship project which aims to study 3D volumetric selection techniques in collaborative AR environments, which is one of the basic interaction techniques needed for exploratory data analysis tasks. The main goal is to study non-structure dependant techniques (i.e., not depending on the data structure), such as the Tangible Brush selection technique [1], according to their general performance, and also regarding collaborative metrics such as the mutual understanding by all the collaborators. For that purpose, based on the literature, the intern should design relevant techniques and study them in the described environment. This project will rely on an existing system which combines multi-touch tablets with multiple AR Head Mounted Displays (such as the Microsoft HoloLens).

See our former poster for more information [2] regarding the envisioned system.

### Required Skills

- You must be in your second year of postgraduate study or equivalent (Master degree, 5<sup>th</sup> year in an engineering degree) at the point of application.
- You must be familiar with the C/C++ and Java programming languages.
- You must have knowledge in Computer Graphics in general.
- Knowledge in Unity and Android SDKs are preferred but not required.
- Knowledge in Client/Server applications and distributed systems are preferred but not required.
- Knowledge in HCI and AR fields are preferred but not required.
- You are able to clearly and concisely communicate in English in written and spoken form.

### Contacts

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### References

- [1] Lonni Besançon, Mickael Sereno, Lingyun Yu, Mehdi Ammi, and Tobias Isenberg. Hybrid touch/tangible spatial 3D data selection. *Computer Graphics Forum*, 38(3):553–567, June 2019.
- [2] Mickael Sereno, Lonni Besançon, and Tobias Isenberg. Supporting volumetric data visualization and analysis by combining augmented reality visuals with multi-touch input. In *Proc. EuroVis*, pages 21–23, 2019. Poster.