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Axel Antoine

I am Research Software Engineer in the Loki team at Inria Lille - Nord Europe in France. Graduated with my PhD, I can adapt to many situations and technologies. I have mostly worked on projects and proofs of concept in the Human Computer Interaction field (HCI) such as: force based techniques to control autoscroll speed on iOS devices and desktop computers, latency compensation techniques on desktop computers using a hardware customized mouse and on mobile devices through software compensation techniques within Chromium or 3D staging techniques to ease the production of vector-based illustrations in Blender.

Projects

Major projects

2020
2nd year **Interaction Illustration Taxonomy**

Software Engineer Intern, Chrome, Input Dev team, Google, Kitchener, ON, Canada

This project proposes a new taxonomy of figures representing interaction scenarios and provides a concise synthesis of visual strategies used to create them. We also provide three online open-source softwares facilitating the exploration of the created dataset, available on github. See publication for details.

[python](#), [javascript](#), [bootstrap](#), [R](#)

2019
14 weeks **Spatial Jitter compensation in Chromium**

Software Engineer Intern, Chrome, Input Dev team, Google, Kitchener, ON, Canada

Design, implementation and evaluation of a spatial jitter technique caused by asynchronous input and output rates experimented on displays with 90Hz and more. The project required to compensate for the jitter in real time for specific devices (e.g. Pixel 4) using input events resampling without impacting performance and precision. The technique is actually implemented and used in Chrome for Android. See publication for details.

[C++](#), [javascript](#), [R](#)

2018
PhD 1st year **Esquisse**

PhD, Loki team, University of Lille, Inria Lille Nord Europe, Villeneuve-d'Ascq, France

Design, implementation and evaluation of 3D staging techniques to facilitate the production of vector-based illustrations. Esquisse is developed as a Blender add-on, proposing 3D interaction techniques to ease the manipulation of 3D objects and embeds an innovative vector-based NPR rendering engine based on state of the art rendering techniques. See publication for details.

[Blender](#), [python](#), [C++](#), [CGAL Library](#), [R](#)

2017
6 months **TurboMouse**

Master's Degree internship, Mjolnir team, Inria Lille Nord Europe, Villeneuve-d'Ascq, France

Design, implementation and evaluation of a latency compensation technique on desktop computers using a high frequency accelerometer embedded in the mouse. This project required specific optimizations to synchronize multiple input sources streams and compute trajectory predictions in real-time. See publication for details.

[C++](#), [Qt Framework](#), [Arduino](#), [R](#)

2016
3 months **ForceEdge**

Master's Degree internship, Mjolnir team, Inria Lille Nord Europe, Villeneuve-d'Ascq, France

Design, implementation and evaluation of autoscroll interaction techniques on both desktop and touch-based force sensitive devices. This project required to design a cross-platform technique to deliver the same user experience on both desktop and mobiles force-sensitive input surfaces. See publication for details.

[Objective-C](#), [iOS](#), [macOS](#), [R](#)

Minor projects

2017
3 months **HandSketch: Vectorial draw creation from 3D scene tool.**

Master's Degree project, University of Lille

Tool allowing the easy creation of a SVG (vectorial) file from a Blender 3D scene. User can choose visual rendering strokes (based on Blender.Freestyle) and add additional vectorial information from external files.

[python](#), [Blender](#)

- 2016 **360 Video player**
 1 week *Master's Degree project, University of Lille*
 Implementation of a 360 video player in a Web browser using WebGL 2.0
[javascript](#), [WebGL](#)
- 2016 **Virtual Reality Navigation Technique**
 2 months *Master's Degree Project, University of Lille*
 Implementation of a virtual reality navigation technique in Unity3D with Oculus Rift using the iPhone 6S inboard gyroscope for orientation control and the force sensitive touchscreen for speed control.
[C#](#), [Unity](#)
- 2014 **Conté: Multimodal Input Inspired by an Artist's Crayon**
 3 months *Technology Degree Project, University of Lille*
 This project aims to map different functionalities to each side of an external pen (e.g. Conté pen) on a touch screen using a resistive sensor.
[C++](#), [Qt Framework](#)

Experience

Positions

- 2021 - 2023 **Research Software Engineer**
ends Jan. 4th *Loki team, Inria Lille Nord Europe. 59650 Villeneuve-d'Ascq, France.*
- 2017 - 2021 **PhD Student, Computer Sciences, Human Computer Interaction**
CRISTAL - University of Lille. 59650 Villeneuve-d'Ascq, France.
Loki team, Inria Lille Nord Europe. 59650 Villeneuve-d'Ascq, France.
- 2019 **Software Engineer Intern, Google**
14 weeks *Chrome, Input Dev team, Google, Kitchener, ON, Canada*
- 2018 - 2020 **Teaching : HCI**
64H *IUT A, University of Lille, Villeneuve-d'Ascq, France*
 Courses and Practicals on "Introduction to HCI" with Java.
- 2018 - 2020 **Teaching : OpenOffice**
64H *IUT A, University of Lille, Villeneuve-d'Ascq, France*
 Praticals on OpenOffice calc.
- 2015 **Support Teaching**
72H *IUT A, University of Lille, Villeneuve-d'Ascq, France*
 Helping students to understand and practice oriented object concepts with Java.

Education

- 2017 - 2021 **PhD, Computer Science, Human Computer Interaction**
CRISTAL, University of Lille, France
Loki team, Inria Lille Nord Europe, France
- 2016 - 2017 **Master's Degree, Computer Science (M2)**
Speciality Image, Vision, Interaction (IVI), University de Lille, France
 15.49 / 20, Good Honors
- 2015 - 2016 **Master's Degree, Computer Science (M1)**
University of Lille France
 16.13 / 20, ranking 2 / 139, Exceptional Honors
- 2014 - 2015 **Bachelor's Degree, Computer Science**
University of Lille, France
 15.14 / 20, Good Honors

2012 - 2014 **Technology Degree, Computer Science**
IUT A, University of Lille, Villeneuve-d'Ascq, France

2011 - 2012 **CPGE PCSI**
Lycée Henri Wallon, 59300 Valenciennes, France

Publications

Thesis

2021 **Études des stratégies et conception d'outils pour la production de supports illustratifs d'interaction**
defended on 29-01-2021
École doctorale Sciences pour l'ingénieur, CRISTAL, Université de Lille
[\[thesis\]](#) [\[presentation\]](#)

International Conferences

CHI'21 **Interaction Illustration Taxonomy: Classification of Styles and Techniques for Visually Representing Interaction Scenarios**
Honorable mention presenter Axel Antoine, Sylvain Malacria, Nicolai Marquardt and Géry Casiez
Proceedings of CHI'21, the 38th Conference on Human Factors in Computing Systems, ACM
[\[doi\]](#) [\[pdf\]](#) [\[video\]](#) [\[presentation\]](#) [\[github\]](#)

UIST'20 **Modeling and Reducing Spatial Jitter caused by Asynchronous Input and Output Rates**
presenter Axel Antoine, Mathieu Nancel, Ella Ge, Jingje Zheng, Navid Zolghadr and Géry Casiez
Proceedings of UIST'20, the 33rd ACM Symposium on User Interface Software and Technology, ACM
[\[doi\]](#) [\[pdf\]](#) [\[sources\]](#)

Interact'19 **Esquisse: Using 3D Models Staging to Facilitate the Creation of Vector-based Trace Figures**
Axel Antoine, Sylvain Malacria, Nicolai Marquardt and Géry Casiez
Proceedings of Interact'19, the 17th IFIP TCI3 Conference on Human-Computer Interaction, Springer
[\[doi\]](#) [\[pdf\]](#) [\[video\]](#) [\[github\]](#)

CHI'18 **Using High Frequency Accelerometer and Mouse to Compensate for End-to-end Latency in Indirect Interaction**
presenter Axel Antoine, Sylvain Malacria, and Géry Casiez
Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems, ACM
[\[doi\]](#) [\[pdf\]](#) [\[video\]](#) [\[presentation\]](#) [\[code\]](#)

CHI'17 **ForceEdge: Controlling Autoscroll on Both Desktop and Mobile Computers Using the Force**
Axel Antoine, Sylvain Malacria, and Géry Casiez
Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems, ACM
[\[doi\]](#) [\[pdf\]](#) [\[video\]](#)

Demonstrations and Posters

CHI'18 **TurboMouse: End-to-end Latency Compensation in Indirect Interaction**
Axel Antoine, Sylvain Malacria, and Géry Casiez
Extended Abstracts of the 2018 CHI Conference on Human Factors in Computing Systems, ACM
[\[doi\]](#) [\[pdf\]](#)

IHM'16 **Utilisation de la force sur pavés tactiles pour le défilement automatique**
Axel Antoine, Sylvain Malacria, and Géry Casiez
Actes De La 28ième Conférence Francophone Sur L'Interaction Homme-Machine, ACM
[\[doi\]](#) [\[pdf\]](#)