

# Arnaud Prouzeau

RESEARCH FELLOW IN HCI AND VISUALISATION

5/35 Donald Street, 3181 Prahran, Australia

☎ (+61) 459 471 572 | ✉ aprouzeau@gmail.com | 🏠 <https://ialab.it.monash.edu/~apro0003> | 🌐 aprouzeau

## Education

---

### Université Paris Saclay

*Paris, France*

PHD. IN HUMAN COMPUTER INTERACTION AT PARIS SACLAY UNIVERSITY

2014 - 2017

- Research topic: "Collaboration around Wall-Display in Command and Control contexts"
- Supervisor: Anastasia Bezerianos and Olivier Chapuis
- Member of the Inria team ILDA (Interacting with Large Dataset) led by Emmanuel Pietriga

### Université Paul Sabatier

*Toulouse, France*

MASTER OF SCIENCE IN HUMAN COMPUTER INTERACTION

2013 - 2014

- Research topic: "Simulating the Risks of Aviation Debris on the Public"
- Supervisor: Prof. Chris Johnson from University of Glasgow

### French School of Civil Aviation (ENAC)

*Toulouse, France*

MASTER'S DEGREE IN ENGINEERING

2011 - 2014

- Top tier engineering school. Specialised in Aeronautics. Trains Engineers, Air Traffic Controllers, Commercial pilots
- Specialisation in Computer Science and Air Traffic Management

## Experience

---

### Monash University

*Melbourne, Australia*

RESEARCH FELLOW

*Jan. 2018 - Now*

- Member of the Immersive Analytics Team.
- My main research topic is the use of VR/AR technology to visualise and interact with data. I particularly focus on collaboration in immersive environments and on the design of immersive interactions.
- Management of the "Cognitive Building" project funded by Honeywell Building Solution. The project consists in designing a self-learning building using machine learning. The use of visual analytics (including AR/VR) is also explored to improve the building managers' understanding of the buildings behavior.
- Participation to the research project "Cognitive Load in Control Room Scenarios" led by Dr Sarah Goodwin. In this project we design a protocol to measure operators' cognitive load using Eye trackers, ECG, and subjective questionnaires. Our main use case is an electrical control room.
- Participation to the research project "Use of Augmented Reality for Microgrid visualisation" led by Dr Barrett Ens. In this project, we explore the use of AR, tangible tokens and a tabletop to visualise energy data.
- Student supervision: Ph.D. and Master thesis, internships, undergraduate research projects.

### University of Glasgow

*Glasgow, Scotland*

RESEARCH INTERN

*Mar. 2014 - Sept. 2014*

- Development of an application to simulate and visualize the impact of aircraft debris after a collision.
- User Centered Design with Airprox inspectors from France and UK.
- Analysis of Airprox incidents.

### Université Paul Sabatier - ENAC

*Toulouse, France*

MASTER PROJECT

*Sept. 2013 - Mar. 2014*

- Design of an Android application to evaluate ATC (Air Traffic Controller) student at the ENAC training centre.

### Thales Air System

*Toulouse, France*

ENGINEER INTERN

*Jul. 2013 - Aug. 2013*

- Development of installation tools for an air traffic control system.

## Grants and Funding

---

- 2019 **Monash-AEMO Collaboration, Chief Investigator.** Sarah Goodwin, Arnaud Prouzeau, Lee Lawrence, Tim Dwyer, Shreejan Pandey. Cognitive Load in Control Room Scenarios. \$97,000.
- 2018 **Monash-Honeywell Collaboration, Lead Investigator.** Arnaud Prouzeau, Barrett Ens, Christoph Bergmeir, Prof. Goeff Webb and Prof. Tim Dwyer. Monash-Honeywell Collaboration on the design of cognitive buildings. \$266,904.
- 2018 **Immersive Visualisation for Microgrid, Chief Investigator.** Barrett Ens, Rob Hyndman, Sarah Goodwin, Arnaud Prouzeau, Fraser Anderson, Ariel Liebman, Assoc. Prof. Tim Dwyer, George Fitzmaurice, Alex Tessier, Yasmina Dkhissi and Tim Hoban. Immersive Spatial Visualisation of Smart Grids. \$81,425.

## Awards and Distinctions

---

- PhD Funding** French ministerial funding a 3-years PhD (2014-2017)
- Robert Aladenyse Award** Distinction for the quality of the end-of-study internship at the ENAC (2014).
- CISEC Award** Distinction for the quality of a work on critical on-board system(2014).

## Publications

---

### Articles in international venues

- **Arnaud Prouzeau**, Antoine Lhuillier, Barrett Ens, Daniel Weiskopf, and Tim Dwyer. 2019. **Visual Link Routing in Immersive Visualisations.** Proceedings the 2018 International Conference on Interactive Surfaces and Spaces (ISS '19). ACM.
- **Arnaud Prouzeau**, Maxime Cordeil, Clément Robin, Barrett Ens, Bruce Thomas, and Tim Dwyer. 2019. **Scaptics and Highlight-Planes: Immersive Interaction Techniques for Finding Occluded Features in 3D Scatterplots.** Proceedings of the 37th international conference on Human factors in computing systems (CHI '19). ACM.
- **Arnaud Prouzeau**, Anastasia Bezerianos, and Olivier Chapuis. 2018. **Awareness Techniques to Aid Transitions between Personal and Shared Workspaces in Multi-Display Environments.** Proceedings the 2018 International Conference on Interactive Surfaces and Spaces (ISS '18). ACM.
- **Arnaud Prouzeau**, Dharshini.M.B, Manivannan Balasubramaniam, Joshua Henry, Ngoc Hoang and Tim Dwyer. 2018. **Visual Analytics for Energy Monitoring in the context of Building Management.** Proceedings of 2018 International Symposium on Big Data Visual and Immersive Analytics (BDVA '18). IEEE.
- **Arnaud Prouzeau**, Anastasia Bezerianos, and Olivier Chapuis. 2017. **Trade-offs Between a Vertical Shared Display and Two Desktops in a Collaborative Path-Finding Task.** In Proceedings of Graphics Interface 2017 (GI '17). CHCCS.
- **Arnaud Prouzeau**, Anastasia Bezerianos, and Olivier Chapuis. 2016. **Evaluating Multi-User Selection for Exploring Graph Topology on Wall-Displays.** In IEEE Transactions on Visualization and Computer Graphics.
- **Arnaud Prouzeau**, Anastasia Bezerianos, and Olivier Chapuis. 2016. **Towards Road Traffic Management with Forecasting on Wall Displays.** In Proceedings of the 2016 ACM on Interactive Surfaces and Spaces (ISS '16). ACM.
- **Arnaud Prouzeau**, and Chris W. Johnson. 2015. **Simulating the Risks from Aircraft Debris to the Public on the Ground.** In Proceedings of the 5th International Conference on Application and Theory of Automation in Command and Control Systems (ATACCS '15). ACM.

### Poster

- **Arnaud Prouzeau**, Anastasia Bezerianos, and Olivier Chapuis. 2015. **Surveillance du trafic routier avec un mur d'écrans.** In Proceedings of the 27th Conference on l'Interaction Homme-Machine (IHM '15). ACM.

### Workshop papers

- Bruno Fruchard, **Arnaud Prouzeau**, Olivier Chapuis, and Eric Lecolinet. 2019. **Leveraging Body Interactions to Support Immersive Analytics.** In CHI Workshop on Immersive Analytics (CHI '19).
- **Arnaud Prouzeau**, Anastasia Bezerianos, and Olivier Chapuis. 2016. **Visual Immersion in the Context of Wall Displays.** In Interactive Surfaces and Spaces Surfaces Companion Proceedings (ISS '16).

## Teaching

---

### Monash University

GUEST LECTURER

- Guest lecture on Immersive Visualisation for the Visualisation unit at Monash University
- Guest lecture on Visualisation for the Infectious Diseases Modelling unit at University of Melbourne

Melbourne, Australia

2018 - 2019

- 64 hours/year
- Basic C++ Programming, Advanced C++ Programming, Programming of Interactive Systems, Foundation of Human-Computer Interaction

## Supervision

---

### Ph.D. Students

- Benjamin Lee - **Interaction for Data Visualisation in Multiuser Heterogeneous Mixed-Reality Environments**. Started in March 2019. Co-supervised with M. Cordeil, B. Jenny, and T. Dwyer.
- Jiazhou Liu - **Small Multiples Visualisation for BIM Data in Immersive Environments**. Started in March 2019. Co-supervised with B. Ens and T. Dwyer.

### Master/Honour Students

- Xin Zhang - **Leverage AR Mobile Game Mechanism to Engage Energy Consumer**. Started in March 2019. Co-supervised with B. Ens and S. Goodwin.
- Jarrod Wesley - **Towards Interpretability of Machine Learning Models in Energy Usage Monitoring**. Started in March 2019. Co-supervised with S. Goodwin and M. Cordeil.
- Xinzhe Li - **Failure Prediction for HVAC Systems using Machine Learning**. Started in March 2019. Co-supervised with C. Bergmeir.
- Chang Deng - **Prediction and simulation for building management using Machine Learning**. Graduated in November 2019. Co-supervised with C. Bergmeir.
- QiuHong Wu - **Impact of visualisation to encourage eco-friendly behaviour**. Graduated in November 2019. Co-supervised with S. Goodwin.
- Yidan Zhang - **Democratising Big Data: Public Interactive Displays of Sustainability Data**. Graduated in November 2019. Co-supervised with S. Goodwin and H. Khalajzadeh.
- Xiaoyun Hu - **Investigating collaborative augmented reality data visualisation**. Graduated in November 2019. Co-supervised with M. Cordeil and T. Dwyer.
- Yuchen Wang - **Immersive Authoring of In-situ Visualization of BIM Data**. Graduated in July 2019. Co-supervised with B. Ens and W. Willett.
- Benjamin Lee - **Interaction for Data Visualisation in Multiuser Heterogeneous Mixed-Reality Environments**. Graduated in November 2018. Co-supervised with M. Cordeil, B. Jenny, and T. Dwyer.
- Jiazhou Liu - **Small Multiples Visualisation for BIM Data in Immersive Environments**. Graduated in November 2018. Co-supervised with B. Ens and T. Dwyer.

### Research Interns

- Umair Afzal - **Measure of Operators' Cognitive Load in Electrical Control Rooms**. 3 months. Co-supervised with S. Goodwin, L. Lawrence, T. Dwyer, and S. Pandey
- Saikiranrao Bichinepally - **Measure of Operators' Cognitive Load in Electrical Control Rooms**. 3 months. Co-supervised with S. Goodwin, L. Lawrence, T. Dwyer, and S. Pandey
- Morgane Buil - **Enhance VR-Desktop Collaboration**. 3 months. Co-supervised with M. Cordeil and T. Dwyer
- Zeenat Hameed - **Virtual and Augmented Reality Visualizations for In-Situ Maintenance**. 3 months. Co-supervised with B. Ens.
- Clément Robin - **Use of Haptic Feedback for Immersive 3D Scatterplots**. 3 months. Co-supervised with M. Cordeil, B. Ens, and T. Dwyer
- Raphael James - **Personal+Context Navigation: Augmented Reality Path-Following in Shared Networks**. 3 months. Co-supervised with M. Cordeil and T. Dwyer

## Skills

---

<b>Programming</b>	<b>Proficient:</b> C# .NET, C, Java, R. <b>Experience with:</b> C++, Python, ADA, Javascript, HTML, PHP
<b>3D engine and programming</b>	<b>Proficient:</b> Unity, SteamVR, MRTK. <b>Experience with:</b> OpenGL/GLSL, shaders, compute shaders
<b>Immersive technology</b>	<b>Multiple project with:</b> HTC Vive pro, Samsung Odyssey +, Microsoft Hololens, Zed Mini, Meta 2
<b>Statistic and visualisation</b>	<b>Proficient:</b> R, ggplot2. <b>Experience with:</b> plotly, D3, tableau
<b>Communication</b>	Public speaking, visual communication, graphic design(Illustrator, Photoshop and PowerPoint)
<b>Languages</b>	English (TOEFL IBT: 111), Spanish

## Community Involvement

---

**Program Committee** CHI 2019 Late Breaking Work, OzCHI 2019

**Reviewing for Conference** VIS 2019, CHI 2020, UIST 2019, Computer Graphics & Application, ISS 2019, VR 2020, Pacific Vis 2020

**Invited Speaker** Melbourne Visualisation Meetup, C3DIS (Melbourne, Australia), LIRIS (Lyon, France)

## Hobbies

---

**Aeronautics** Took a few flying lessons, I am passionate by whatever looks like an airplane

**Reading** Big fan of Stephen King, and thrillers in general. I also like scientific and history books

**Traveling** Inside or outside France, I like discovering new landscapes and cultures. I travelled to several countries including Australia, US, Canada, Indonesia, Malaysia and Scotland

## References

---

Upon request