# Lijie Yao 姚李捷 (女)

地址 1: Bâtiment 660, Université Paris-Sud, 91405 Orsay Cedex, France
地址 2: MS 680, University of Calgary, 2500 University Dr NW, Calgary, AB T2N 1N4, Canada
电邮：yaolijie0219@gmail.com | 电话：+33 6 58 71 00 98 | 生日：1996/02/19 | 政治面貌：中共党员
个人主页：https://lijieyao.com | 谷歌学术：W-fVL00AAAAJ | ORCID：0000-0002-4208-5140

## About Me 关于本人

Lijie Yao 姚李捷 is a final-year Ph.D. candidate in Human-computer Interaction at the AVIZ team, Inria Saclay, University Paris-Saclay, and CNRS, supervised by Dr. Petra Isenberg and Dr. Anastasia Bezerianos. Her Ph.D. thesis is on "Situated Visualization in Motion". Her work focused on exploring the impact of motion and spatial factors on visualizations' perception and how to best design and embed visualizations under motion in real application scenarios. She got her M.S. degree in Computer Science from University Paris-Saclay in 2020 and her M.Eng degree in Electrical and Computer Engineering from Polytech Lille in 2019. She received her B.Eng degree in Electronic and Information Engineering from XIDIAN University in 2018. She is now open to work.

姚李捷是就读于 Inria 法国国家信息和自动化研究所 AVIZ 课题组，巴黎萨克雷大学（法国）和 CNRS 法国国家科学研究中心的人机交互专业的博士毕业生。她的博士课题指导老师为 Petra Isenberg 博士和 Anastasia Bezerianos 博士。她的博士课题为"嵌入式运动可视化"。她的工作专注于探索运动因素和空间因素对可视化感知的影响，以及如何在实际使用场景中最好的设计和嵌入运动可视化。她于 2020 年获得巴黎萨克雷大学（法国）计算机科学专业的学术硕士文凭，2019 年获得里尔第一大学（法国）工程师学院电气信息工程专业的工程硕士文凭，2018 年获得西安电子科技大学（中国西安）电子信息工程专业的工学学士文凭。她目前关注就业市场。

## Research Area 研究方向

- Human-Computer Interaction: Focus on Visual Analytics & Information Visualization.
  人机交互：关注视觉分析及信息可视化。

- Situated Visualization in Motion: Explore the impact of motion & spatial factors on visualizations' perception and how to best design and embed visualizations in motion in real application scenarios/in the physical world.
  嵌入式运动可视化：探索运动因素及空间因素对可视化感知的影响，以及如何在实际应用场景/物理世界中最好地设计和嵌入运动可视化。

- Mobile & Wearable Devices: Mine users' real data needs in different using scenarios, particularly for health data and sports tracking, and develop prototypes to quickly design the visual representations and improve the perception efficiency of data displayed.
  移动及可穿戴设备：挖掘用户在不同使用场景下的真实数据需求，尤其针对健康数据和运动追踪数据；开发设计针对移动及可穿戴设备的快速视觉呈现原型，提高数据展示的感知效率。

*该文档内所有下划线内容均可点击*

# Education 教育经历

09/2020 – 12/2023    **University Paris-Saclay 巴黎萨克雷大学（法国）**      Gif-sur-Yvette, France

Ph.D. - Human-computer Interaction
哲学博士 – 人机交互

- Ph.D. Thesis: Situated visualization in motion
  博士课题：嵌入式运动可视化（课题范围及成果详见研究方向和学术成果）
- Supervisors: Dr. Petra Isenberg and Dr. Anastasia Bezerianos
  博士课题指导老师：Dr. Petra Isenberg and Dr. Anastasia Bezerianos

09/2019 – 09/2020    **University Paris-Saclay 巴黎萨克雷大学（法国）**      Gif-sur-Yvette, France

M.S. - Computer Science
学术硕士 – 计算机科学（人机交互）

- Master Thesis: Situated visualization in motion
  硕士课题：嵌入式运动可视化（课题范围及成果详见研究方向和学术成果）
- Supervisors: Dr. Petra Isenberg
  硕士课题指导老师：Dr. Petra Isenberg

09/2017 – 09/2019    **Polytech Lille 里尔第一大学综合理工学院（法国）**      Lille, France

M.Eng - Electrical and Computer Engineering
工程硕士 – 电气信息学

- Master Thesis: Drone Control based on ROS
  硕士课题：基于 ROS 机器人操作系统的无人机控制（课题内容详见在校项目经历）
- Supervisors: Dr. Komi Midzodzi Pekpe
  硕士课题指导老师：Dr. Komi Midzodzi Pekpe

08/2014 – 08/2017    **XIDIAN University 西安电子科技大学（中国西安）**      Xi'an, China

B.Eng - Electronic and Information Engineering
工学学士 - 电子信息工程

- Bachelor Thesis: Wearable Device for Real-time Health Monitoring
  学士课题：用于实时健康监测的可穿戴设备（课题内容详见在校项目经历）
- Supervisors: Dr. Xavier Redon and Dr. Alexandre Boé
  学士课题指导老师：Dr. Xavier Redon and Dr. Alexandre Boé

# Work Experiences 工作经历

07/2023 – Present    **University of Calgary 卡尔加里大学（加拿大）**      Calgary, Canada

Visiting Researcher
访问学者

- Project: Situated Visualization in Motion for Mobile & Wearable Devices
  访学课题：针对移动及可穿戴设备的嵌入式运动可视化
- Team: DATA X EXPERIENCE LAB
  课题组：DATA X EXPERIENCE LAB
- Supervisor: Dr. Wesley Willett & Dr. Petra Isenberg
  访学课题指导老师：Dr. Wesley Willett & Dr. Petra Isenberg

01/2022 – 03/2023 **University Paris-Saclay** 巴黎萨克雷大学（法国）                    Gif-sur-Yvette, France
Teaching Assistant
助教

　　· Give part of master's lectures and tutorials: Animated visualization and motion,
　　　Visualization with time series data, Design and sketching, P5 tutorial, and D3 tutorial.
　　　教授部分硕士课程（大课及教程）：动画及运动可视化，时间序列数据可视化，可视
　　　化设计，P5 教程，D3 教程。

09/2020 – Present **Inria** 法国国家信息和自动化研究所（法国）                    Gif-sur-Yvette, France
Doctoral Researcher
博士生研究员

　　· Team: AVIZ
　　　课题组：AVIZ（课题范围及成果详见研究方向和学术成果）

03/2020 – 09/2020 **Inria** 法国国家信息和自动化研究所（法国）                    Gif-sur-Yvette, France
Research Intern
学术硕士实习

　　· Team: AVIZ
　　　课题组：AVIZ（课题范围及成果详见研究方向和学术成果）

03/2019 – 09/2019 **Saint-Gobain** 圣戈班（法国）                    Compiègne, France
Maintenance Management Intern
工程硕士实习 – 工业机器人运维管理

　　· Independently managed and completed two diffusable projects, collected and analyzed
　　　data, and communicated among different cultures.
　　　独立管理两个集成项目：收集运维数据，完成数据分析，在多文化间进行有效沟通

06/2018 – 08/2018 **MCC HUATIAN** 中冶华天（中国南京）                    Nanjing, China
Front-end Developer
工程硕士实习 - 前端开发

　　· Implemented a website that offered user management services.
　　　实现用户管理服务的网页开发

## Languages 语言能力

- Chinese: Native speaker
  中文：母语

- English: Professional working proficiency (Level: C1)
  英语：职业水平，工作语言（等级：欧标 C1）

- French: Professional working proficiency (Level: C1)
  法语：职业水平，工作语言（等级：欧标 C1）

# Publication 学术成果

- **Lijie Yao,** Anastasia Bezerianos, Romain Vuillemot, Petra Isenberg. Visualization in Motion: A Research Agenda and Two Evaluations. *IEEE Transactions on Visualization and Computer Graphics ([TVCG](#)),* 2022, 28(10), pp. 3546-3562, ⟨10.1109/TVCG.2022.3184993⟩, ⟨hal-03698837⟩.

  TVCG: 中科院 SCI 期刊分区计算机科学 1 区 | CCF 计算机图形学与多媒体 A 类期刊 | 五年影响因子：5.6

  *Abstract:*

  We contribute a research agenda for visualization in motion and two experiments to understand how well viewers can read data from moving visualizations. We define visualizations in motion as visual data representations that are used in contexts that exhibit relative motion between a viewer and an entire visualization. Sports analytics, video games, wearable devices, or data physicalizations are example contexts that involve different types of relative motion between a viewer and a visualization. To analyze the opportunities and challenges for designing visualization in motion, we show example scenarios and outline a first research agenda. Motivated primarily by the prevalence of and opportunities for visualizations in sports and video games we started to investigate a small aspect of our research agenda: the impact of two important characteristics of motion—speed and trajectory on a stationary viewer's ability to read data from moving donut and bar charts. We found that increasing speed and trajectory complexity did negatively affect the accuracy of reading values from the charts and that bar charts were more negatively impacted. In practice, however, this impact was small: both charts were still read fairly accurately.

- Yvonne Jansen, Federica Bucchieri, Pierre Dragicevic, Martin Hachet, Morgane Koval, Léana Petiot, Arnaud Prouzeau, Dieter Schmalstieg, **Lijie Yao,** Petra Isenberg. Envisioning Situated Visualizations of Environmental Footprints in an Urban Environment. *In Proceeding of the IEEE conference on Visualization ([IEEE VIS](#)), Visualization for Social Good*, October 2022, Oklahoma, United States. ⟨hal-03770857⟩.

  IEEE VIS: CCF 计算机图形学与多媒体 A 类会议

  *Abstract:*

  We present the results of a brainstorming exercise focused on how situated visualizations could be used to better understand the state of the environment and our personal behavioral impact on it. Specifically, we conducted a day long workshop in the French city of Bordeaux where we envisioned situated visualizations of urban environmental footprints. We explored the city and took photos and notes about possible situated visualizations of environmental footprints that could be embedded near places, people, or objects of interest. We found that our designs targeted four purposes and used four different methods that could be further explored to test situated visualizations for the protection of the environment.

- Alaul Islam*, **Lijie Yao*,** Anastasia Bezerianos, Tanja Blascheck, Tingying He, Bongshin Lee, Romain Vuillemot, Petra Isenberg.. Reflections on Visualization in Motion for Fitness Trackers. *In Proceeding of the ACM International Conference on Mobile Human-Computer Interaction ([MobileHCI](#)), New Trends in HCI and Sports,* September 2022, Vancouver, Canada. ⟨hal-03775633⟩.

  MobileHCI : CCF 人机交互与普适计算 B 类会议

  *Abstract:*

  In this paper, we reflect on our past work towards understanding how to design visualizations for fitness trackers that are used in motion. We have coined the term "visualization in motion" for visualizations that are used in the presence of relative motion between a viewer and the visualization. Here, we describe how visualization in motion is relevant to sports scenarios. We also provide new data on current smartwatch visualizations for sports and discuss future challenges for visualizations in motion for fitness trackers.

  *\* These authors contributed equally.*

- Federica Bucchieri, **Lijie Yao,** Petra Isenberg. Situated Visualization in Motion for Video Games. *Posters of the EuroGraphics Conference on Visualization (EuroVis),* June 2022, Rome, Italy. ⟨10.2312/evp.20221119⟩, ⟨hal-03694019⟩.

  EuroVis: CCF 计算机图形学与多媒体 B 类会议

  *Abstract:*
  We contribute a systematic review of situated visualizations in motion in the context of video games. Video games produce rich dynamic datasets during gameplay that are often visualized to help players succeed in a game. Often these visualizations are moving either because they are attached to moving game elements or due to camera changes. We want to understand to what extent this motion and contextual game factors impact how players can read these visualizations. In order to ground our work, we surveyed 160 visualizations in motion and their embeddings in the game world. Here, we report on our analysis and categorization of these visualizations.

- **Lijie Yao,** Anastasia Bezerianos, Romain Vuillemot, Petra Isenberg. Situated Visualization in Motion for Swimming*. Poster of the France National Conference on Visualization (Journée Visu),* June 2022, Bordeaux, France. ⟨hal-03700406⟩.

  Journée Visu: 法国国家可视化峰会

  *Abstract:*
  Competitive sports coverage increasingly includes information on athlete or team statistics and records. Sports video coverage has traditionally embedded representations of this data in fixed locations on the screen, but more recently also attached representations to athletes or other targets in motion. These publicly used representations so far have been rather simple and systematic investigations of the research space of embedded visualizations in motion are still missing. Here we report on our preliminary research in the domain of professional and amateur swimming. We analyzed how visualizations are currently added to the coverage of Olympics swimming competitions and then plan to derive a design space for embedded data representations for swimming competitions. We are currently conducting a crowdsourced survey to explore which kind of swimming-related data general audiences are interested in, in order to identify opportunities for additional visualizations to be added to swimming competition coverage.

- Federica Bucchieri, **Lijie Yao,** Petra Isenberg. Visualization in Motion in Video Games for Different Types of Data. *Poster of the France National Conference on Visualization (Journée Visu),* June 2022, Bordeaux, France. ⟨hal-03700418⟩.

  Journée Visu: 法国国家可视化峰会

  *Abstract:*
  We contribute an analysis of situated visualizations in motion in video games for different types of data, with a focus on quantitative and categorical data representations. Video games convey a lot of data to players, to help them succeed in the game. These visualizations frequently move across the screen due to camera changes or because the game elements themselves move. Our ultimate goal is to understand how motion factors affect visualization readability in video games and subsequently the players' performance in the game. We started our work by surveying the characteristics of how motion currently influences which kind of data representations in video games. We conducted a systematic review of 160 visualizations in motion in video games and extracted patterns and considerations regarding was what, and how visualizations currently exhibit motion factors in video games.

- **Lijie Yao**, Anastasia Bezerianos, and Petra Isenberg. Situated Visualization in Motion. *Posters of the IEEE Conference on Visualization (IEEE VIS)*, October 2020, Salt Lake City, United States. ⟨hal-02946587v2⟩.

  IEEE VIS: CCF 计算机图形学与多媒体 A 类会议

  *Abstract:*
  We contribute a first design space on visualizations in motion and the design of a pilot study we plan to run in the fall. Visualizations can be useful in contexts where either the observation is in motion or the whole visualization is moving at various speeds. Imagine, for example, displays attached to an athlete or animal that show data about the wearer – for example, captured from a fitness tracking band; or a visualization attached to a moving object such as a vehicle or a soccer ball. The ultimate goal of our research is to inform the design of visualizations under motion.

# Awards 获奖经历

- 03/2023　　　　　　　　Mitacs Globalink Research Award, MITCAS Canada
  Mitacs 科研奖学金（加拿大）

# Teaching 任教经历

**UNIVERSITY PARIS-SACLAY 巴黎萨克雷大学（法国）**

- 2022/2023　　　　　　　Master course: Interactive Information Visualization
  硕士课程：交互式信息可视化

- 2021/2022　　　　　　　Master course: Interactive Information Visualization
  硕士课程：交互式信息可视化

# Supervision 指导学生

- Federica Bucchieri, 03/2022 - 08/2022, Situated Visualization in Motion for Video Games, Master's graduation level research internship, Human-Computer Interaction, Université Paris-Saclay, co-supervised with Dr. Petra Isenberg.
  与 Petra Isenberg 博士共同指导 Federica Bucchieri 完成其在巴黎萨克雷大学（法国）人机交互专业学术硕士的毕业课题：嵌入式可视化在游戏应用场景下的研究。

# Service 学术服务

**REVIEW 审稿（同行评审）**

- 2023 IEEE Information Visualization Conference (*IEEE VIS*)
- 2023 EuroGraphics Conference on Visualization (*EuroVis*)
- 2023 ACM Conference on Human Factors in Computing Systems (*CHI*)
- 2022 IEEE Information Visualization Conference (*IEEE VIS*)
- 2022 ACM SIG International Conference on Computer Graphics and Interactive Techniques (*SIGGRAPH Asia*)

- 2022 EuroGraphics Conference on Visualization (*EuroVis*)
- 2021 IEEE Information Visualization Conference (*IEEE VIS*)
- 2020 IEEE Information Visualization Conference (*IEEE VIS*)

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# THE FOLLOWING CONTENT IS FROM MY BACHELOR'S AND MASTERS' PERIODS.
## 以下内容为本人本科及硕士期间的工作和奖项

## On-campus Project Experience 在校项目经历

12/2019 – 02/2020 **AR Game Development base on Unity**                Gif-sur-Yvette, France
基于 Unity 的 AR 游戏开发（法国）

· Project type: Course project - Personal project
项目类型：课程项目 - 个人项目

· Introduction: This was a course project, based on Unity, implemented by C#, through Vuforia library to develop an AR game applied for mobile devices.
项目介绍：该增强现实项目基于 Unity，使用 C#及 Vuforia 库实现了一款应用于移动设备的 AR 游戏。

02/2019 – 10/2020 **Posture Interaction base on AlphaPose**                Gif-sur-Yvette, France
基于 AlphaPose 的姿态识别（法国）

· Project type: Course project - Work by two
项目类型：课程项目 – 双人项目

· Introduction: This full stack project was based on an open-source object detection library -- AlphaPose. The back end was implemented by Python, while the front end was realized by web techniques, including H5/JS/CSS/Ajax/Django. We provide the possibilities to interact with webpages through different postures in real-time. For instance, scroll a page up and down by nodding, zoom a figure in and out by stretching your thumb and index, swipe a page left and right by turning your body, and go to the next page by waving your hands.
项目介绍：该全栈项目基于开源目标检测库 AlphaPose，后端由 Python 实现，前端由例如 H5、JS、CSS、Ajax、Django 等网页开发技术实现。我们提供通过不同姿态与网页实时交互的可能性。 例如，通过点头来上下滚动页面，通过伸展拇指和食指来放大和缩小图形，通过转动身体来左右滑动页面，通过挥手来转到下一页。

· My work: I implemented the back end, front end and the server.
我的工作：完成了前后端的开发和服务端的搭建

02/2019 – 10/2020 **Drone Control based on ROS**                Lille, France
基于 ROS 机器人操作系统的无人机控制（法国）

· Project type: Graduation-level project - Work by two
项目类型：硕士课题 – 双人项目

· Introduction: This project was based on ROS Kinetic, a specific robot operating system. We used the drone's camera and sensors to capture videos and images. We conducted image processing to detect the target object. We realized the smooth flying/pausing of the drone when tracking an object by automated closed-loop feedback.

项目介绍：该项目基于 ROS Kinetic 无人机操作系统。我们使用无人机的摄像头和传感器来捕捉视频和图像。 我们通过图像处理来检测目标物体。 我们通过自动闭环反馈实现了无人机跟踪物体时的平稳飞行/暂停。

· My work: I established the working space of ROS, configured the camera and sensors and the communication between them, processed images based on standard computer vision, and implemented the user interface.

我的工作：建立了 ROS 的工作空间，配置了相机和传感器，完成了串口通信调试，基于计算机视觉进行了图像处理，并实现了用户界面。

02/2018 – 04/2018 **Wearable Device for Real-time Health Monitoring**                     Lille, France
用于实时健康监测的可穿戴设备（法国）

· Project type: Under graduation-level project - Work by two
项目类型：本科课题 – 双人项目

· Introduction: This project was based on a microcontroller ATMega328p, a temperature sensor TLC5947, a heart rate sensor, a self-design and self-soldered PCB, and individual LED lights. We realized a wearable electrical necklace with functionality to monitor the wearer's heart rate and temperature variance. When the wearer's heart rate and/or temperature was out of the normal range, the LED lights on the necklace would switch their colors to alarm.

项目介绍：该项目基于微控制器 ATMega328p、温度传感器 TLC5947、心率传感器、自行设计和焊接的 PCB 主板，以及单独的 LED 灯。 我们实现了一款可穿戴电子项链，具有监测佩戴者心率和温度变化的功能。 当佩戴者的心率和/或体温超出正常范围时，项链上的 LED 灯会切换颜色以发出警报。

· My work: I designed and soldered the PCB, configured the communications between interfaces, and programmed the main functionality.

我的工作：设计并焊接了 PCB 主板，配置了接口之间的通信，并对主要功能进行了程序实现。

11/2015 – 10/2017 **A Virtual Machine Service based on Cloud Computing**                     Xian, China
基于云计算的网页虚拟机服务（中国西安）

· Project type: Teamwork – 5 team members
项目类型：团队项目 – 5 人团队

· Introduction: We realized a campus network based cloud computing platform. Our platform provided virtual machine service to students and faculty members through online access. Our platform provided the accessibility to a virtual machine 24/24 hours and 7/7 days from different client devices (both PC and mobile ends) and through different operating systems (windows, Linux, Android, and iOS). Our platform also provided storage and computing functions.

项目介绍：我们实现了一个基于校园网的云计算平台。 我们的平台通过在线访问为学生和教职员工提供虚拟机服务。 我们的平台提供了从不同客户端设备（PC 端和移动

端）以及通过不同操作系统（Windows、Linux、Android 和 iOS）对虚拟机进行 24/24 小时和 7/7 天的访问。 我们的平台还提供存储和计算功能。

- · My work: I was the project leader. I established a private cloud based on ZStack and implemented the front-end interface.
  我的工作：项目负责人，基于 ZStack 建立了私有云并实现了前端接口

- · Award: This work was awarded to the Excellent Project in Innovation and Entrepreneurship Training Program of Shaanxi Province.
  获得奖项：该项目被授予陕西省大学生创新创业训练计划省级优秀

09/2015 – 10/2015  **Tangible Interaction based on Arduino**                           Xian, China
基于 Arduino 的有形交互（中国西安）

- · Project type:  Teamwork – 3 team members
  项目类型：团队项目 – 3 人团队

- · Introduction: We proposed interactions with computers through fruits. We connected fruits with computers with Arduino and cables. We modified the software-based music's tone and melody by different touch forces and touch positions on fruits.
  项目介绍：我们提出了通过水果与计算机进行交互。 我们使用 Arduino，接线和老虎夹实现了水果与计算机的通信连接。 我们通过对水果的不同触摸力和触摸位置来修改基于软件的音乐的音色和音调。

- · My work: I was the project leader. I took care of the configuration of communication between interfaces.
  我的工作：项目负责人，完成了接口之间的通信配置

- · Award: This work was awarded to the Second Award of the 27th XingHuoBei (星火杯) of XIDIAN University.
  获得奖项：该项目被授予西安电子科技大学第 27 界星火杯二等奖

## Awards

- 2018.06                荣获西安电子科技大学校级"优秀毕业生"
- 2017.12                获得西安电子科技大学"励志奖"奖学金
- 2017.12                获得西安电子科技大学"勤奋奖"奖学金
- 2015.06 - 2017.11        连续三年获得西安电子科技大学校级"优秀学生干部"
- 2017.07                《基于云计算的网页虚拟机服务》获得陕西省大学生创新创业训练计划项目 省级优秀
- 2016.06                获得西安电子科技大学校级二等奖学金
- 2015.07                获得西安电子科技大学"华山优秀学生干部"
- 2015.07                获得西安电子科技大学"华山道德模范"
- 2015.07                获得西安电子科技大学"华山活力之星"
- 2015.12                《基于 Arduino 的触摸控制》获得西安电子科技大学第二十七届星火杯校级二 等奖
- 2015.06                获得西安电子科技大学校级三等奖学金
- 2015.05                获得西安电子科技大学第二届国际文化节"优秀志愿者"
- 2014.12                获得西安电子科技大学第 59 期大学生业余党校高级班"优秀学员"荣誉称号
- 2014.08                获得西安电子科技大学军训旅"优秀学生"