






Maxime Daniel (27 ans)

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Experience

2018 – 2020 **Research Engineer.** ESTIA Tech, ESTIA, 97 allée Théodore Monod, Technopole Izarbel, 64210 Bidart, France.

Education & Qualification

2019 – 2024 **Qualification for Lecturer Position in Section 27 - Computer Science**

Number: 1922733197.

Granted: February 14, 2019.

Validity: 5 years.

2015 – 2018 **Doctorate in Computer Science, Speciality in Human-Computer Interaction, University of Bordeaux, France.**

Title: *Shape-Changing Cylindrical Displays: Application to Data Physicalization and Peripheral Interaction for Energy Demand-Side Management.*

Jury:

<i>Pascal Desbarats</i>	<i>Professor Univ. Bordeaux</i>	<i>President</i>
<i>Gaëlle Calvary</i>	<i>Professor ENSIMAG</i>	<i>Reporter</i>
<i>Elena Mugellini</i>	<i>Professor HES-SO</i>	<i>Reporter</i>
<i>Aurélien Tabard</i>	<i>Lecturer Univ. Lyon 1</i>	<i>Examinator</i>
<i>Alexandre Dugarry</i>	<i>CEO GreenMe</i>	<i>Examinator</i>
<i>Stéphane Kreckelbergh</i>	<i>Research Associate ESTIA</i>	<i>Co-supervisor</i>
<i>Nadine Couture</i>	<i>Professor ESTIA</i>	<i>Director</i>
<i>Guillaume Rivière</i>	<i>Associate Professor ESTIA</i>	<i>Director</i>

Host laboratory:

ESTIA Recherche, ESTIA, 97 allée Théodore Monod, Technopole Izarbel, 64210 Bidart, France.

2013 – 2015 **Master in Computer-Science, Speciality in Image, Sound and Video, Université de Bordeaux, France.**

Title: *Virtual Environment for Electroencephalography-Based Evaluation of User Experience.*

Jury:

<i>Pascal Desbarats</i>	<i>Professor Univ. Bordeaux</i>	<i>Referent</i>
<i>Julien Castet</i>	<i>PhD Univ. Grenoble, R&D Immersion</i>	<i>Tutor</i>
<i>Jeremy Frey</i>	<i>PhD Student Univ. Bordeaux, INRIA</i>	<i>Collaborator</i>
<i>Fabien Lotte</i>	<i>Research Leader INRIA</i>	<i>Collaborator</i>

Host laboratory:

POTIOC Team, INRIA Bordeaux, 200 Avenue de la Vieille Tour, 33405 Talence.

Mention: Good.

Education & Qualification (suite)

- 2010 – 2013 **Licence in Mathematics, Computer Science and Statistics, Speciality in Computer Science, University of South Brittany, Vannes, France.**
Mention: Good.
- 2010 **Baccalaureate in Economics and Social Science, Lycée Benjamin-franklin, Auray, France.**

Teaching

ESTIA 2015-2020 (318h)

- 1h L | 3h AL **Internet of Things. 3rd Year Engineer Cycle.**
Content: Introduction to the concept, architecture, applications and challenges of the Internet of Things (IoT). Implementing a web application using the ESP8266 module for monitoring sensors and controlling actuators
- 1h L **Augmented Virtuality. 3rd Year Engineer Cycle.**
Content: Feedback on the design and the implementation of a Tangible User Interface (TUI) – an embodiment of the concept of Augmented Virtuality (AV).
- 20h AL **Student Project Tutorat. 2nd Year Engineer Cycle.**
- 1h L | 2h AL **Git: Initiation. 3rd Year Engineer Cycle.**
Content: Initiation to Git for tracking changes in source code during software development.
- 1h L | 3h AL **Literature Review Methods: SLR. 2nd Year Engineer Cycle.**
Content: Identifying, analyzing and synthesizing knowledge using the Systematic Literature Review (SLR).
- 2h L | 2h AL **Literature Management Tools: Zotero. 2nd Year Engineer Cycle.**
Content: Gathering, organizing, annotating, and exporting literature data using Zotero, an open-source reference management software.
- 18h AL **Communicating and Mobile Objects. 2nd Year Engineer Cycle.**
Content: Implementing the concept of Internet of Things (IoT) through the software & hardware development of a Java Android Application communicating in Bluetooth with an Arduino board using sensors and actuators.
- 32h AL **Event-Oriented Programming. 2nd Year Engineer Cycle.**
Content: Implementing the architecture Model-View-Controller (MVC) through the software development of a Graphical User Interface (GUI) with Java programming.
- 16h T | 64h AL **Object-Oriented Programming. 2nd Year Engineer Cycle.**
Content: Implementing the concept of objects, classes, Inheritance and polymorphism with Java programming.

Teaching (suite)

- 44h AL **Procedural Programming.** *1st Year Engineer Cycle.*
Content: *Implementing the concept of data structures, control structures and procedures with C programming.*
- 4h T | 32h AL **Web Development.** *1st Year Engineer Cycle.*
Content: *Implementing a web site with HTML, CSS3 and JS programming.*
- 72h AL **Red Wire Project: App & Robot.** *3rd Year Bachelor Cycle.*
Content: *Full stack web programming and IoT programming.*

Research

Visions

- Tangible Bits People have developed sophisticated skills for sensing and manipulating our physical environments. However, most of these skills are not employed by traditional Graphical User Interface (GUIs). Tangible Bits [Ishii and Ullmer, 1997; Ishii, 2008] seeks to build upon these skills by giving physical form to digital information, seamlessly coupling the dual worlds of bits and atoms: Tangible User Interfaces (TUIs) are the embodiment of this vision by employing physical objects for the representation and the manipulation of digital information [Ishii and Ullmer, 1997].

Challenges

- Shape Change Making physical objects as malleable as virtual objects is a great challenge for TUIs. Since the last decade, there is an increasing number of research works on Shape-Changing Interfaces (SCIs) [Strohmeier, 2016]. Nowadays research on SCIs focuses more on the feasibility than on the utility or usability of Shape Change [Rasmussen et al., 2012]: understanding the usefulness and the user experience of shape change is still a challenge for TUIs [Alexander et al., 2018].

Projects

- Cylindrical Shape
Change for Display We designed CairnFORM [Daniel et al., 2018; Daniel et al., 2019], a stack of expandable illuminated rings for display that can change of Cylindrical Shape (e.g., cone, double cone, bicone, cylinder, spheroid). Through user studies, we demonstrate that Cylindrical Shape Change can be used (1) for informing users around the display through Data Physicalization [Daniel et al., 2019], (2) for unobtrusively notifying users around the display through Peripheral Interaction [Daniel et al., 2019], (3) for offering a greater User Experience over time than a traditional flat display with no Shape Change [Daniel, 2018].

Workflow & Skills

1. Understanding **Synthetizing Knowledge** (Systematic Litterature Review).
2. Designing **Ideating** (Brainstorming, 9-Windows, Biomimicry), **Sketching** (Autodesk Sketchbook), **Modeling** (Autodesk Fusion 360) and **Simulating** (Unity3D).

Research (suite)

- 3. Prototyping **Manufacturing** (3D printing, Laser cutting, Thermoforming), **Integrating** (Raspberry Pi, Arduino, sensors, actuators), **Hardware Programming** (Python, C), **Software Programming** (C++/QT5, Java/JavaFX, Python/PyQT, C/Xamarin), **Vision Programming** (C++/OpenCV) and **Web Programming** (Full Stack Django Python, Full Stack MERN Javascript).
- 4. Experimenting **Gathering Data** (structured questionnaires, semi-structured interviews, real-time measurements with sensors) and **Computing Statistics** (R, Python, NumPy, Pandas, SciPy, StatsModels).
- 5. Reporting **Open sourcing** (GitHub, OnShape), **Video editing** (Adobe After Effect), **Paper writing** (LaTeX, Word, Markdown) and **Talking** (english operational, french native).

Publications in Peer-Reviewed International Conferences

- 8 pages [Long Paper] **Daniel, M.**, Rivière, G. and Couture, N. (2019). Cairnform: A shape-changing ring chart notifying renewable energy availability in peripheral locations. *Proceedings of the thirteenth international conference on tangible, embedded, and embodied interaction* (pp. 275–286). TEI '19. Tempe, Arizona, USA: ACM. doi:10.1145/3294109.3295634
- 4 pages [Work In Progress] **Daniel, M.**, Rivière, G. and Couture, N. (2018). Designing an expandable illuminated ring to build an actuated ring chart. *Proceedings of the twelfth international conference on tangible, embedded, and embodied interaction* (pp. 140–147). TEI '18. Stockholm, Sweden: ACM. doi:10.1145/3173225.3173294
- 8 pages [Long Paper] Frey, J., **Daniel, M.**, Castet, J., Hachet, M. and Lotte, F. (2016). Framework for electroencephalography-based evaluation of user experience. *Proceedings of the 2016 chi conference on human factors in computing systems* (pp. 2283–2294). CHI '16. San Jose, California, USA: ACM. doi:10.1145/2858036.2858525



Publications in Peer-Reviewed Francophone Conferences

- 2 pages [Demonstration] **Daniel, M.**, Couture, N. and Rivière, G. (2018). CairnFORM. *Proceedings of the 30th conference on l'interaction homme-machine* (p. XXX). IHM '18. Brest, France: ACM. doi:XXX
- 4 pages [Work In Progress] **Daniel, M.**, Couture, N. and Rivière, G. (2017). Cairns: An ambient tangible interface for shifting energy demand at work. *Proceedings of the 29th conference on l'interaction homme-machine* (pp. 221–231). IHM '17. Poitiers, France: ACM. doi:10.1145/3132129.3132152
- [Work In Progress] **Daniel, M.**, Rivière, G. and Couture, N. (2016). Persuasive interactive systems in public and collective spaces: What role for tangible interfaces ? *Actes de la 28ième conference francophone sur l'interaction homme-machine* (pp. 221–229). IHM '16. Fribourg, Switzerland: ACM. doi:10.1145/3004107.3004131

Research (suite)

- 8 pages [Long Paper] **Daniel, M.**, Rivière, G., Couture, N. and Kreckelbergh, S. (2016). An analysis of persuasive technologies for energy demand side management. *Actes de la 28ième conférence francophone sur l'interaction homme-machine* (pp. 197–210). IHM '16. Fribourg, Switzerland: ACM. doi:10.1145/3004107.3004111

Publications in other Peer-Reviewed Communications

- 4 pages [Symposium] Ambrosino, J., **Daniel, M.**, Masson, D. and Legardeur, J. (2017). IdeaBulb: A Smart and Tangible User Interface for Monitoring Ideation During Creative Sessions. *SMART INTERFACES 2017, The Symposium for Empowering and Smart Interfaces in Engineering* (pp. 70–74). SMART INTERFACES 2017, The Symposium for Empowering and Smart Interfaces in Engineering. Venice, Italy: Berntzen, L. et al.  <https://hal.archives-ouvertes.fr/hal-01534697>
- [Workshop] **Daniel, M.** (2017). Designing and Evaluating Ambient Tangible Interfaces for Shifting Energy Supply in the Workplace. *3rd European Tangible Interaction Studio*. Esch/Alzette, Luxembourg.  <https://hal.archives-ouvertes.fr/hal-01685710>
- [Doctoral Consortium] **Daniel, M.** (2016). Tangible Interfaces as Support for Energy Management. *Rencontres Doctorales de la 28ième conférence francophone sur l'Interaction Homme-Machine*. Fribourg, Switzerland.  <https://hal.archives-ouvertes.fr/hal-01685683>

Community

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| Scientific Review | Long Paper (8 pages). <i>29ème conférence sur l'interaction homme-machine (IHM'17).</i> |
| | Long Paper (8 pages). <i>14th International Conference on Tangible, Embedded, and Embodied Interactions (TEI'20).</i> |
| Industrial Exhibition | NOVAQ 2018. <i>September 14, 2018, Bordeaux, France.</i> |
| | TechnoDay 2018. <i>April 4, 2018, Bordeaux, France.</i> |