CV – Alexandre Mercier-Aubin

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Personal Profile

My fields of study include computer graphics, physics-based animation, optimization and algorithm design, as well as constraint programming. They allows me to choose abstract topics while visualizing the results interactively. My work in computer graphics blends a certain artistic touch with classical science. The outcomes led to applications both in surgical simulators and in more recreational contexts such as films and video games. I also have an interest for teaching, seeing this as an important step towards the transfer of knowledge and skills to the new generation of workers and scientists.

Education

2020-2024 PhD in Computer Science - McGill University
Research in computer graphics on efficient animations with Prof Paul G. Kry
GPA: 3.90

2019-2020 M. Sc. in Computer Science - Université Laval
Research in constraint programming with Prof. Claude-Guy Quimper
GPA: 3.93

2017-2019 B. Sc. in Computer Science - Université Laval
honors
GPA: 3.73

2014-2017 DEC in Computer Science - Cégep Lévis-Lauzon

Publications

In order to offer free and open access to scientific innovations, all of my publications are available on my website: alexandremercieraubin.com

Papers

1. **Alexandre Mercier-Aubin**, Ludwig Dumetz, Jonathan Gaudreault, and Claude-Guy Quimper. The Confidence Constraint: A Step Towards Stochastic CP Solvers. In Proceedings of the 26th International Conference on Principles and Practice of Constraint Programming (CP), pages 759-773, 2020.
2. **Alexandre Mercier-Aubin**, Jonathan Gaudreault, and Claude-Guy Quimper. Leveraging Constraint Scheduling: A Case Study to the Textile Industry. In Proceedings of the 17th International Conference on the Integration of Constraint Programming, Artificial Intelligence, and Operations Research (CPAIOR), pages 334-346, 2020.
3. **Alexandre Mercier-Aubin**, Alexandre Winter, David I. W. Levin, and Paul G. Kry. Adaptive Rigidification of Elastic Solids. In ACM Transactions on Graphics (TOG), volume 41, issue 4, article 71, 2022.
4. **Alexandre Mercier-Aubin** and Paul G. Kry. Adaptive Rigidification of Discrete Shells. In Proceedings of the ACM on Computer Graphics and Interactive Techniques (PACMCGIT), volume 6, issue 3, 2023.
5. **Alexandre Mercier-Aubin** and Paul G. Kry. A Multi-layer Solver for XPBD. In Proceedings of the Computer Graphics Forum (CGF), volume 43, issue 8, 2024.

6. Joël Pelletier-Guénette, **Alexandre Mercier-Aubin**, and Sheldon Andrews. Real-Time Triangle-SDF Continuous Collision Detection. Conditinally accepted for publication in Proceedings of the ACM on Computer Graphics and Interactive Techniques (PACMCGIT), 2025.

Workshops

7. **Alexandre Mercier-Aubin**, Jonathan Gaudreault, and Claude-Guy Quimper. Multi-Resource Scheduling with Setup Times: An Application Case to the Textile Industry. In Doctoral Program Proceedings of the 25th International Conference on Principles and Practice of Constraint Programming (CP), 2019.

PhD Thesis

8. **Alexandre Mercier-Aubin**, Adaptive Methods for Deformables, McGill University, 2024.

Master's Thesis

9. **Alexandre Mercier-Aubin**, Ordonnancement de tâches sous contraintes sur des métiers à tisser, Université Laval, 2020.

Posters

10. **Alexandre Mercier-Aubin**, Adaptive Rigidification of Elastic Solids Prototype, Graphics Interface (GI), 2022.
11. **Alexandre Mercier-Aubin**, Adaptive Rigidification of Elastic Solids Prototype, colloque REPARTI, 2022.

Talks

12. The Confidence Constraint: A Step Towards Stochastic CP Solvers. International Conference on Principles and Practice of Constraint Programming (CP), 2020.
13. Leveraging Constraint Scheduling: A Case Study to the Textile Industry. International Conference on the Integration of Constraint Programming (CPAIOR), 2020.
14. Adaptive Method for Soft Body Simulations. Tomatograph, 2021.
15. Adaptive Rigidification of Elastic Solids. Special Interest Group on Computer Graphics and Interactive Techniques (SIGGRAPH), 2022.
16. Infographie et Animation Physique : Solidification de Matériaux Viscoélatisques. Séminaire Université Laval, 2022.
17. Adaptive Rigidification of Discrete Shells. Symposium on Computer Animation (SCA), 2023.
18. Strain-based Multi-Layer solver for XPBD. Quebec-Ontario pre-SIGGRAPH (GraphQuOn), 2023.
19. A Multi-layer Solver for XPBD. Symposium on Computer Animation (SCA), 2024.

Prizes and Scholarships

- **Fonds de recherche du Québec (FRQNT): 2nd and 3rd cycle scholarship**

  25 000$ *per year, up to 3 years*

- **Natural Sciences and Engineering Research Council of Canada (NSERC) Alliance Grant**

  15 000 Symgery partnership

- **Bourse de doctorat Hydro-Québec en Science**

  15 000$ *per year, up to 2 years*

- **School of Computer Science PhD funding, McGill University**

  21 000$ *per year, up to 3 years*
  3 000$ top up from Mechanical Engineering.

- **MITACS accelerate, CRISI**

  39 000$

- **Undergraduate Research Fellowship 2019-2020, Université Laval**

  I declined 6500$

- **Association for Constraint Programming, CP2019**

  450$

Research and Teaching

2025/08 - Now Sherbrooke University
Assistant Professor

Teach and do research in computer graphics / physics-based animations.

2025/01 - 2025/06 École de technologie supérieure
Postdoctoral researcher

Supervising graduate students, sharing research, and writing grant applications.

2024/05 - 2024/07 Autodesk
Research Intern

Rigid body differentiable simulations for surface optimization.

2020 - 2023 McGill
teaching assistant and AGSEM delegate

Hold office hours, mark exams, and present various guest lectures for the courses on computer graphics, computer animations, and introduction to computer systems.

2020 Université Laval
teaching assistant

Teach the practical aspect (weekly labs) of the advanced programming in C++ course. Mark the exams in the computer graphics course. Support students at the help centre for computer science students (CARÉ) with questions related to 15 different computer science courses.

2017/01 - 2017/08 Centre de Robotique et Vision Industrielle
Intern/Programmer

Machine learning applied to Computer Vision, program robot controllers, and develop a new website for employees.

Industry

2018/05 - 2018/09 Activision, Beenox
game engine developer intern

Design and program the game engine for Call of Duty: Black Ops 4.
Technologies: DirectX, C++, LUA
Contributions: Shaders, LOD formulas, Bugfixes, HUD formulas, cross-platform compatibility, etc.

2016/05 - 2016/09 Valero, Levis
computer science intern

Translate programs from Visual Basic to C#.

2015/05 - 2015/09 Consortium de ressources et d'expertises coopératives
IT Technician

IT support, creating and managing a database, creating a web site, etc.

Service

- **Poster Chair, SCA, 2025**

  Poster chair for the Symposium on Computer Animation conference.

- **Delegate, AGSEM, 2020-2021**

  Elected as the delegate of the computer science department. As a syndicate member, one of the main mandates was to verify the tentative appointment list for the hiring unit. If the department did not respect the union's rules, then file a grievance. Other responsibilities included the organization and participation in events, formations and such.

- **V.P. Social, AGIL, 2019/9-2020/9**

  Organize events for the association of graduate student in computer science at Laval University (AGIL).

- **Student volunteer, SCA, 2020 and 2024**

  Support the Symposium on Computer Animation (SCA) conference by ensuring the smooth operation of sessions, main exhibitions, as well as the overall organization of activities and the design of promotional materials.

- **Chair of session, SCA, 2024**

  The chair of the Physics I: Fluids, Shells and Natural Phenomena session.

- **Reviewer**

  Review papers for IEEE Transactions on Visualization and Computer Graphics (TVCG), Eurographics (EG), and Motions, Interactions and Games (MIG).