

# Marie-Eve Dumas

*Computer Science & Mathematics*

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🌐 <https://mxrie-eve.github.io>

## Skills.

Languages. Python, Java, C++,  $\text{\LaTeX}$ , JavaScript, Bash scripting and UNIX.

Services. Microsoft Azure, Google Cloud.

Other. Git, MATLAB.

## Experience.

2017–Present **Software Developer**

DATAPERFORMERS, Montreal, Qc.

- Build customized ETL pipelines in Python that receive and transform data from various sources
- Train and deploy machine learning models to provide data driven solutions

2015–2017 **Graduate Student Researcher**

CFD LAB - MCGILL UNIVERSITY, Montreal, Qc.

- Developed modules in Fortran to model hypersonic flow around aircraft in a Finite-Element framework
- Implemented optimized numerical methods to provide accurate and efficient prediction of surface properties

2015–2017 **Academic Projects**

MCGILL UNIVERSITY, Montreal, Qc.

- Implemented a **raytracer** with anti-aliasing, hierarchy, instances, shadows, lighting and shading.
- Implemented a **surface simplification algorithm**, which can rapidly produce high quality approximations of polygonal models. The algorithm uses iterative contractions of vertex pairs to simplify models and maintains surface error approximations using quadric matrices.
- Developed a Finite Element functioning Stream-function code that converges to machine precision in order to **model the viscous flow** over an Airfoil.

## Education.

2015 – 2017 **Master of Mechanical Engineering** , *Computational Fluid Dynamics*.

MCGILL UNIVERSITY, Montreal, Qc.

Computer Graphics, Finite Element Methods in CFD, Parallel Computing, Computer Simulations, Numerical Modeling and Analysis

2009 – 2013 **Bachelor of Science** , *Major in Mathematics and Minor in Computer Science*.

MCGILL UNIVERSITY, Montreal, Qc.

Data Structures and Algorithms, Numerical Analysis, Algorithm Design, Algorithmic Game Theory, Analysis, Algebra, Calculus, Mathematical Logic, Probability, Statistics

## Publications.

- 2017 Dumas, M. E., Habashi, W. G., Baruzzi, G. S, Isola, D. and Fossati, M. "*Finite Element Modeling of Nonequilibrium Fluid–Wall Interaction at High–Mach Regime*," in *Journal of Aircraft*, Vol. 54, No. 6, pp. 2330-2339.
- 2016 Dumas, M. E., Habashi, W. G., Fossati, M., Baruzzi, G. S. and Isola, D. "*Finite element modeling of non-equilibrium fluid-wall interaction beyond the continuum regime*," in *54th AIAA Aerospace Sciences Meeting*.

## Personal favorites.

- Music Artists. Moderat, Sigur Ros, Radiohead, Rule of Thirds, The Knife.
- TV Shows. Rick and Morty, Stranger Things, Handmaids Tale.
- Movies. Dogtooth, Being John Malkovitch, Incendies.
- Books. L'Idiot (Dostoevsky), Huis Clos (Sartre), Trouve-toi une vie (Cloutier).
- Food. Steak Tacos, coffee, Côte d'or chocolate, Sushis, Breakfast.