

Quoc-Minh Ton-That

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Education

École de Technologie Supérieure

May 2021 - Present

Ph.D. Computer Science

- Thesis on real-time elastodynamic simulation with cutting for virtual surgery. Co-supervised by professors [Sheldon Andrews](#) and [Paul G. Kry](#).

École de Technologie Supérieure

May 2018 - Apr 2021

B.Eng. Software Engineering

- GPA: 4.0/4.3

Experience

Research Scientist

June 2021 - Mar 2022

Symgery

- Engineered an Unreal Engine plugin for real-time surgical simulation including cutting.
- Improved soft body simulation stability in cut regions via a novel hybrid FEM-SPH coupling method.

R&D Software Developer

May 2020 - Aug 2020

Symgery

- Enhanced visual fidelity of topologically changing geometry by extending a real-time GPU accelerated isosurface extraction algorithm.
- Enabled graphical customization of essential boundary conditions for reduced order FEM models in the Unreal Engine editor.

R&D Software Developer

Apr 2019 - Aug 2019

PreVu3D

- Orchestrated an end-to-end automated surface reconstruction pipeline to transform laser scanned point clouds to full-fledged refined 3D polygon meshes without manual intervention.
- Designed a large scale data storage mechanism in the cloud for efficient out-of-core point cloud streaming.

Cloud Software Developer

Sep 2018 - Apr 2019

Genetec

- Developed a proof of concept cutting-edge microservices system for the migration of legacy cloud software components.
- Upgraded legacy cloud system monitoring tools, reducing on-call alerts by 20 %.

Publications

Generalized eXtended Finite Element Method for Deformable Cutting via Boolean Operations

Aug 2024

Quoc-Minh Ton-That, Paul G. Kry, Sheldon Andrews

<https://doi.org/10.1111/cgf.15184>

Parallel Block Neo-Hookean XPBD using Graph Clustering

Nov 2022

Quoc-Minh Ton-That, Paul G. Kry, Sheldon Andrews

<https://doi.org/10.1016/j.cag.2022.10.009>

Talks

Generalized eXtended Finite Element Method for Deformable Cutting via Boolean Operations	Aug 2024
<i>The 23rd ACM SIGGRAPH / Eurographics Symposium on Computer Animation (SCA 2024) at McGill University, Montreal. <u>Best Paper award</u></i>	
Parallel Block Neo-Hookean XPBD using Graph Clustering	Nov 2022
<i>The 15th annual ACM/SIGGRAPH conference on Motion, Interaction and Games (MIG 2022) at Universidad de Guanajuato, Mexico. <u>Best Paper honourable mention</u></i>	

Awards

FRQNT Doctoral Scholarship	2024 - 2028
<i>Fonds de recherche du Québec — 100 000 CAD</i>	
NSERC Canada Graduate Scholarship - Master's program	2023 - 2024
<i>Natural Sciences and Engineering Research Council of Canada — 17 500 CAD</i>	
FRQNT Master's Scholarship	2023 - 2024
<i>Fonds de recherche du Québec — 17 500 CAD</i>	
Mitacs Accelerate Fellowship	2021 - 2022
<i>Mitacs — 30 000 CAD</i>	
Academic Excellence Scholarship	2021 - 2023
<i>École de Technologie Supérieure — 40 000 CAD</i>	
Undergraduate Honour List	2021
<i>École de Technologie Supérieure</i>	
Academic Excellence Scholarship	2018
<i>TD Insurance Meloche Monnex — 2 000 CAD</i>	


Teaching

MTI855 Game Physics	May 2023 - Aug 2023
<i>Graduate course instructor — École de Technologie Supérieure</i>	

Referee Service

ACM Transactions on Graphics (TOG)	2023
Computer Graphics Forum (CGF)	2024

Projects

Physics Based Animation Toolkit	github 
◦ Cross-platform C++ library of algorithms and data structures commonly used in computer graphics research on physically-based simulation with Python bindings.	

Skills

Languages: C++, Python
Technologies: CMake, Git, CUDA
Methods: Matrix computations, Optimization, Numerical partial differential equations (PDEs), Parallel computing, Graph algorithms, Machine learning

Hobbies

Football, Weightlifting, Manga, Anime, Animals, Music
