

# Quoc-Minh Ton-That

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## Experience

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### Research Scientist

June 2021 - March 2022

*Symgery Inc.*

- 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 Inc.*

- 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

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### 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

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### Generalized eXtended Finite Element Method for Deformable Cutting via Boolean Operations

Aug 2024

*The 23rd ACM SIGGRAPH / Eurographics Symposium on Computer Animation (SCA 2024) at McGill University, Montreal. Best Paper award*

### Parallel Block Neo-Hookean XPBD using Graph Clustering

Nov 2022

*The 15th annual ACM/SIGGRAPH conference on Motion, Interaction and Games (MIG 2022) at Universidad de Guanajuato, Mexico. Best Paper honourable mention*

## Awards

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

## Teaching

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<b>MTI855 Game Physics</b> <i>Graduate course instructor.</i>	May 2023 - Aug 2023
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## Referee Service

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<b>ACM Transactions on Graphics (TOG)</b>	2023
<b>Computer Graphics Forum (CGF)</b>	2024

## Projects

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<b>Physics Based Animation Toolkit</b>	<a href="#">github</a> 
◦ Cross-platform C++ library of algorithms and data structures commonly used in computer graphics research on physically-based simulation with Python bindings.	

## Skills

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

## Hobbies

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Football
Weightlifting
Manga/Anime
Animals
Music