Quoc-Minh Ton-That

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Q-Minh

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

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

FRQNT Doctoral Scholarship 2024 - 2028
Fonds de recherche du Québec — 100 000 CAD

NSERC Canada Graduate Scholarship - Master's program 2023 - 2024
Natural Sciences and Engineering Research Council of Canada — 17 500 CAD

FRQNT Master's Scholarship 2023 - 2024
Fonds de recherche du Québec — 17 500 CAD

Mitacs Accelerate Fellowship 2021 - 2022
Mitacs — 30 000 CAD

Academic Excellence Scholarship 2021 - 2023
École de Technologie Supérieure — 40 000 CAD

Undergraduate Honour List 2021
École de Technologie Supérieure

Academic Excellence Scholarship 2018
TD Insurance Meloche Monnex — 2 000 CAD

Teaching

MTI855 Game Physics May 2023 - Aug 2023
Graduate course instructor — École de Technologie Supérieure

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