

Ahmed Mahmoud

CONTACT INFORMATION

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EDUCATION

University of California, Davis, USA

Ph.D. in Electrical and Computer Engineering, (*Expected Spring 2023*)

- Advisor: Prof. John D. Owens
- Research interests: Parallel Computing, Geometry Processing, and Computer Graphics

University of California, Davis, USA

M.Sc. in Electrical and Computer Engineering, (*Fall 2020*)

- Advisor: Prof. John D. Owens

Alexandria University, Egypt

B.S. in Marine Engineering and Naval Architecture, (*Spring 2013*)

- Very good with honors, Ranked first

PROFESSIONAL EXPERIENCE

Autodesk Research, Toronto, Canada

Senior Research Scientist (*November 2020 - Present*)

University of California, Davis, USA

Graduate Student Researcher (*Spring 2016 - October 2020*)

Autodesk Research, Toronto, Canada

Intern, Numerical Analysis Research (*June - December 2019, July - November 2020*)

Shenzhen University, China

Research intern at the Visual Computing Research Center (*June 2018 - September 2018*)

REFEREED PUBLICATIONS

- [1] Massimiliano Meneghin[†], *Ahmed H. Mahmoud*[†], Pradeep Kumar Jayaraman, and Nigel J. W. Morris. **Neon: A Multi-GPU Programming Model for Grid-based Computations**. In Proceedings of the 37th IEEE International Parallel and Distributed Processing Symposium, IPDPS 2022, June 2022.
[†] joint first author.
- [2] *Ahmed H. Mahmoud*, Serban D. Porumbescu, and John D. Owens. **RXMesh: A GPU Mesh Data Structure**. ACM Transactions on Graphics, 40(4):104:1–104:16, August 2021 (SIGGRAPH 2021).
- [3] Ahmed Abdelkader, Chandrajit L. Bajaj, Mohamed S. Ebeida, *Ahmed H. Mahmoud*, Scott A. Mitchell, John D. Owens and Ahmad A. Rushdi. **VoroCrust: Voronoi Meshing Without Clipping**. ACM Transactions on Graphics, 39(3):23:1–23:16, May 2020 (SIGGRAPH 2020).

- [4] Ahmed Abdelkader, Chandrajit L. Bajaj, Mohamed S. Ebeida, *Ahmed H. Mahmoud*, Scott A. Mitchell, John D. Owens and Ahmad A. Rushdi. **Sampling Conditions for Conforming Voronoi Meshing by the VoroCrust Algorithm**. In Bettina Speckmann and Csaba D. Tóth, editors, 34th International Symposium on Computational Geometry (SoCG 2018), volume 99 of Leibniz International Proceedings in Informatics (LIPIcs), pages 1:1-1:16, Dagstuhl, Germany, June 2018. Schloss Dagstuhl-Leibniz-Zentrum für Informatik.
- [5] Ahmed Abdelkader[†], *Ahmed H. Mahmoud*[†] Ahmad A. Rushdi, Scott A. Mitchell, John D. Owens, and Mohamed S. Ebeida. **A Constrained Resampling Strategy for Mesh Improvement**. Computer Graphics Forum, 36(5):189-201, July 2017. Proceedings of the Symposium on Geometry Processing.
- [†] joint first author.
- [6] Ahmad A. Rushdi, Scott A. Mitchell, *Ahmed H. Mahmoud*, Chandrajit L. Bajaj, and Mohamed S. Ebeida. **All-Quad Meshing without Cleanup**. Computer-Aided Design, 85:83-98, April 2017.
- [7] Mohamed S. Ebeida, Ahmad Rushdi, Muhammad A. Awad, *Ahmed H. Mahmoud*, Dongming Yan, Shawn English, John D. Owens, Chandrajit Bajaj, and Scott A. Mitchell. **Disk Density Tuning of a Maximal Random Packing**. Computer Graphics Forum, 35(5):256-269, June 2016. Proceedings of the Symposium on Geometry Processing.
- [8] **(Book Chapter)** Mohamed S. Ebeida, Scott A. Mitchell, Anjul Patney, Andrew A. Davidson, Stanley Tzeng, Muhammad A. Awad, *Ahmed H. Mahmoud*, and John D. Owens. **Exercises in High-Dimensional Sampling: Maximal Poisson-disk Sampling and k-d Darts**. In Janine Bennett, Fabien Vivodtzev, and Valerio Pascucci, editors, *Topological and Statistical Methods for Complex Data: Tackling Large-Scale, High-Dimensional, and Multivariate Data Spaces*, pages 221-238. Springer, November 2014.
- [9] Scott A. Mitchell, Mohammed A. Mohammed, *Ahmed H. Mahmoud* and Mohamed S. Ebeida. **Delaunay Quadrangulation by Two-coloring Vertices**. Procedia Engineering, 82:364-376, October 2014. Proceedings of the 23rd International Meshing Roundtable.
- [10] Mohamed S. Ebeida, Muhammad A. Awad, Xiaoyin Ge, *Ahmed H. Mahmoud*, Scott A. Mitchell, Patrick M. Knupp, and Li-Yi Wei. **Improving Spatial Coverage while Preserving the Blue Noise of Point Sets**. Computer-Aided Design, 46:25-36, January 2014. Proceedings of 2013 SIAM Conference on Geometric and Physical Modeling, SIAM GD/SPM13.
- [11] Mohamed S. Ebeida, *Ahmed H. Mahmoud*, Muhammad A. Awad, Mohammed A. Mohammed, Scott A. Mitchell, Alex Rand, and John D. Owens. **Sifted Disks**. Computer Graphics Forum, 32(2):509-518, May 2013. Proceedings Eurographics 2013.

SERVICE

External Reviewer

- Eurographics 2023
- Computer Aided Geometric Design (2022)
- The SIAM International Meshing Roundtable Workshop (2022, 2023)
- International Meshing Roundtable (2019, 2021)
- Computer-Aided Design (2019)

TEACHING
ASSISTANTSHIPS

University of California, Davis
Courses: Control Systems I (EEC 157A).

Fall 2017

Alexandria University

December 2014 - January 2016

Courses: Computer Programming (CS224), Ships and Machines Drawing (MR111), Fluid Mechanics (MR231), Fluid Mechanics and Hydraulic Machines (MR232), Marine Hydrodynamics (OCE323), Theory of Machines (ME145), Material Technology (MR242), Marine Power Plants (MR352).

RELEVANT
COURSEWORK

University of California, Davis

- **Computer Engineering:** Modern Parallel Computing (EEC 289Q), Parallel Computer Architecture (EEC 171), Graphics Architecture (EEC 277), Advanced Visualization (ECS 277), Advanced Computer Graphics (ECS 275A), An Introduction to Reinforcement Learning (EEC 289A), Data Analytics for Computer Engineers (EEC 289Q).
- **Mathematics:** Numerical Methods: Fundamentals (MAT 226A), Numerical Methods: Large-Scale Matrix (MAT 226B), Optimization (EEC 254), Mathematics for Data Analysis and Decision Making (MAT 160), Numerical Methods for Partial Differential Equations (MAT 228B).

TECHNICAL
SKILLS

C/C++, CUDA, MATLAB, Python, OpenGL, CMake, L^AT_EX.