Kelsey Kurzeja

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Experience

Software Engineer (promoted to senior), *nTopology* May 2021 – Oct. 2025

• *Topics*: implicit geometry kernel, curved coordinate spaces, curved lattices, conforming lattices, ribbed structures, gyroids, swept surfaces and volumes, splines, NURBS curves and surfaces, arc-spline curve approximation, triangle meshes, tetrahedral meshes, harmonic mapping, interval arithmetic, automatic differentiation, dual numbers, fast robust polynomial solver, GPU code generation, SIMD, Abstract Syntax Tree (AST), interpreters, bytecode optimization, sphere tracing, implicit voxelization, octree acceleration, Bounding Volume Hierarchy (BVH) acceleration, closest point on implicit query, bounding box of implicit query
• *Tools*: C/C++, GLSL, Visual Studio, agile development, JIRA, Git, Github
• Worked closely with product managers to understand and set scope of work.
• Developed code for features to satisfy specifications and user needs.
• Wrote unit tests to guide development and to ensure edge cases are handled well.
• Worked with QA engineers to create tests and to ensure my code is of high quality.
• Profiled and debugged existing code to improve quality.
• Collaborated with other engineers in problem solving, ideation, and pair programming

Graduate research, *Georgia Tech* Jan. 2017 – May 2021

• *Topics*: periodic lattices, microstructures, hierarchical structures, implicit modeling, distance fields, Constructive Solid Geometry (CSG), voxelization, lattice and CSG rendering, sphere tracing, lattice triangulation, similarity/Mobius transformations, circle/sphere inversions, steady transformations, interpolation, spirals, symmetry, geometric query acceleration, GPU acceleration, additive manufacturing, user interfaces
• *Tools*: Java/Processing, C/C++, OpenGL, GLSL
• Co-authored four papers published in Computer-Aided Design

Geometric modeling intern, *Siemens* Summer 2018

Graduate research / Intern, *Georgia Tech Research Institute* Mar. 2015 – Dec. 2016

Education

Ph.D. in computer science, *Georgia Tech* Aug. 2015 – May 2021

• Focus on computer graphics and geometric modeling. Advised by Jarek Rossignac.
• Thesis: *Constructive Lattice Geometry* (2021)
• Teaching assistant for Computer Graphics and Computational Aesthetics courses

BS in computer science (Highest honor), *Georgia Tech* Awarded Dec. 2014

Publications

BeCOTS: Bent Corner-Operated Tran-Similar Maps and Lattices 2020

CHoCC: Convex Hull of Cospherical Circles and Applications to Lattices 2020

RangeFinder: Accelerating ball-interference queries against steady lattices 2019

Programmed-Lattice Editor and accelerated processing of parametric program-representations of steady lattice 2019