

H. Quynh Dinh

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Summary

I am a Senior Software Engineer and Engineering Manager with success providing effective solutions for challenging 3D geometry and computer vision requirements. Strengths include effectively delivering production quality solutions by developing mathematical algorithms, experience working in agile teams with engineers and artists, and communicating technical information to a variety of audiences from senior management to customers.

Core Competencies

- Computer vision, 3D modeling and rendering, computational geometry, surface reconstruction, laser scanning, solid modeling, feature extraction, object recognition, photogrammetry
- Well-versed in C/C++, Python, object-oriented programming, test-driving methodology, and Agile development; familiarity with JavaScript, MEL (Maya Embedded Language) script, SQL
- Graphics APIs and software: OpenCV, OpenMesh, Tensorflow, shaders, OpenGL, OpenGL Shading Language (GLSL), Nvidia Cg Autodesk Maya, Blender, Adobe Creative Suite

Professional Experience

CARMERA, Brooklyn, NY 2017–present
Senior Computer Vision Engineer

Research and develop computational geometry and image processing algorithms for 3D point clouds and 360° camera images.

Achievements

- Developed algorithms for registering 3D point clouds from multiple field of view scans acquired from a moving LiDAR (Velodyne/Maverick)
- Developed software to rectify and stitch panoramas from a 360° camera (FLIR Ladybug)
- Developed image processing software to blur people and license plates in video frames and panoramic images for privacy protection
- Developed support software to integrate high definition vector street maps with 3D point clouds

MakerBot Industries LLC, Brooklyn, NY 2013–2017
Principal Computational Geometry Engineer

Technical and team lead on two multi-disciplinary engineering teams responsible for essential backend software in 3D printing and 3D scanning.

Achievements

- Led a team of senior developers on innovations to the Slicer software that converts 3D geometry into 2D paths specifying how lines of molten plastic are laid down to build up a 3D object
- Technical lead in the multi-disciplinary team that developed the MakerBot Digitizer Desktop 3D Scanner which received the “Popular Mechanics 2013 Breakthrough Product” award
- Delivered on all aspects of a product lifecycle, including requirements specification, code and architecture review, code development, bug fixing, tracking and prioritizing issues in an Agile workflow using Jira
- Successfully integrated and maintained a robust backend library for processing 3D geometry
- Directly impacted strategic development by communicating with executive management, building relationships with mechanical, electrical and industrial engineering teams, initiating and reviewing invention disclosures for patent applications, and performing competitive analysis on software and hardware products

Blue Sky Studios, 20th Century Fox Animation, Greenwich, CT 2009–2013
Associate Member of Research & Development

Worked on geometry and rendering software in a proprietary rendering engine. Developed new algorithms to support production requirements for innovative visual effects. Collaborated with Materials, Special Effects and Rigging production departments to augment the studio’s animation and artist toolkits.

Achievements

- Developed features that were adopted for use in multiple feature-length animated films
- Developed an adaptive refinement algorithm for triangle meshes, derived from NURBS surfaces with displacements to add geometric detail to environment models and characters. The algorithm was used to render tree trunks in the animated feature film *Epic*, which took place in a forest
- Developed a new approach to maintain an asset's position and orientation with respect to underlying geometry as it shifts (e.g., trees involved in avalanches in *Ice Age 4*)
- Designed and implemented an algorithm to generate vector fields over 3D surfaces that were then used to orient textures on the surface

Stevens Institute of Technology, Hoboken, NJ
Assistant Professor, Department of Computer Science

2002–2009

Led team of students conducting research on 3D shape modeling, morphing, volume rendering, 3D shape matching, vector field pattern analysis, and multimedia search.

Achievements

- Received Honda Research Institute and NSF grants
- Published research papers at CVPR and ICPR
- Supervised postdoc, PhD students, Masters thesis students, and undergraduate research students
- Participated in PhD thesis committees and technical paper reviews for international conferences

Education

Georgia Institute of Technology, Atlanta, GA
George Washington University, Washington, D.C.

Computer Science, M.S. 1999, **Ph.D.** 2002
Computer Engineering, B.S. 1994

Talks & Film Credits

For a complete list with publications and grants, please see: <http://hqdinh.com>

- H.Q. Dinh, S. Lefebvre, F. Gelman, and F. Claux. "Modeling and Toolpath Generation for Consumer-Level 3D Printing", presented at the *ACM International Conference & Exhibition on Computer Graphics & Interactive Techniques* (SIGGRAPH), 2015
- *Epic*. Blue Sky Studios, 20th Century Fox, released May 2013. Software/R&D credit.
- *Ice Age 4: Continental Drift*. Blue Sky Studios, 20th Century Fox, released July 2012. Software/R&D credit.
- *Rio*. Blue Sky Studios, 20th Century Fox, released April 2011. Software/R&D credit.