Patrick Cozzi

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Education

University of Pennsylvania 2006 - 2008
M.S.E. in Computer and Information Science, GPA 3.97

Pennsylvania State University 1999 - 2003
B.S. in Computer Science, GPA 3.72
Minor in Engineering Leadership Development, In-Minor GPA 4.0

Books

WebGL Insights CRC Press
Patrick Cozzi, Editor 07/2015

OpenGL Insights CRC Press
Patrick Cozzi and Christophe Riccio, Editors 07/2012

3D Engine Design for Virtual Globes A K Peters, Ltd.
Patrick Cozzi and Kevin Ring 06/2011

Teaching

University of Pennsylvania Philadelphia, PA
Part-Time Lecturer 01/2011 - Present

CIS 565: GPU Programming and Architecture
- Fall 2016 - Instructor Rating: 3.71, Course Rating: 3.71
- Fall 2015 - Instructor Rating: 3.63, Course Rating: 3.56
- Fall 2014 - Instructor Rating: 2.94, Course Rating: 3.12
- Fall 2013 - Instructor Rating: 3.92, Course Rating: 3.75
- Fall 2012 - Instructor Rating: 3.6, Course Rating: 3.9
- Spring 2012 - Instructor Rating: 3.41, Course Rating: 2.94
- Spring 2011 - Instructor Rating: 3.73, Course Rating: 3.36

CIS 700/003: Real-Time Rendering
- Spring 2014 - Instructor Rating: 4.0, Course Rating: 4.0

Advising
- Spring 2017 - Evaluating BVH splitting strategies with Vulkan by Trung Le
- Spring 2017 - Analysis of Ray Batching on the GPU by Akshay Sha
- Spring 2017 - Introducing Physically-Based Rendering to glTF 2.0 by Mohamad Moneimne
- Spring 2016 - WebGL 2 Samples Pack by Shuai Shao (Shrek) and Trung Le
- Spring 2016 - glTF Pipeline by Richard Lee
- Fall 2015 - Open-Source Software Development (CIS 399) mentor for Tiff Lu and Adam Cole
- Spring 2015 - Image-Based Lighting by Cheng-Tso Lin
- Spring 2015 - Voxel Map Construction and Rendering by Dave Kotfis
- Fall 2012 - Real-Time Voxels by Sean Lilley, Ian Lilley, and Nop Jiarathanakul

Guest Lectures
- Spring 2017 and 2016 - CIS 350: Software Design & Engineering
- Fall 2016 - CS371: Computational Graphics (Williams College)
- Fall 2016 and 2015 - CIS 399: Open-Source Software Development
- Fall 2015 - Dining Philosophers: Getting Started with Open-Source Software Development
- Fall and Spring 2014 - CS 536: Computer Graphics I (Drexel University)
- Spring 2014 and 2013 - CIS 277: Introduction to Computer Graphics Techniques
- Spring 2012 - CIS 371: Computer Organization and Design

- Fall 2009 - CIS 560: Computer Graphics

C++ Boot Camp
- September 2013, 2012, 2011, 2010

Work Experience

Analytical Graphics, Inc. — Exton, PA
Principal Graphics Architect — 07/2013 - Present
Senior Software Developer — 03/2010 - 07/2013
Software Developer — 01/2004 - 03/2010

IBM Corporation — Almaden Research Lab, San Jose, CA
Extreme Blue Software Engineer Intern — 06/2003 - 08/2003

IBM Corporation — Endicott, NY
z/VM Operating System Development Intern — 05/2002 - 12/2002

Intel Corporation — Folsom, CA
System Validation Engineer Co-op — 05/2000 - 12/2000

Book Chapters

Octree Mapping from a Depth Camera in GPU Pro 7 — CRC Press
Dave Kotfis and Patrick Cozzi — Expected 03/2016

glTF: Designing an Open-Standard Runtime Asset Format in GPU Pro 5 — CRC Press
Fabrice Robinet, Remi Arnaud, Tony Parisi, and Patrick Cozzi — 05/2014

A WebGL Globe Rendering Pipeline in GPU Pro 4 — CRC Press
Patrick Cozzi and Daniel Bagnell — 04/2013

WebGL for OpenGL Developers in OpenGL Insights — CRC Press
Patrick Cozzi and Scott Hunter — 07/2012

Delaying OpenGL Calls in Game Engine Gems 2 — A K Peters, Ltd.
Patrick Cozzi — 02/2011

A Framework for GLSL Engine Uniforms in Game Engine Gems 2 — A K Peters, Ltd.
Patrick Cozzi — 02/2011

Selected Publications

A Screen-Space Approach to Rendering Polylines on Terrain — SIGGRAPH Poster Session
Deron Ohlarik and Patrick Cozzi — 08/2011

GPU Ray Casting of Virtual Globes — SIGGRAPH Poster Session
Patrick Cozzi and Frank Stoner — 07/2010

Visibility Driven Out-of-Core HLOD Rendering — Masters Thesis
Patrick Cozzi, Thesis Advisor: Dr. Norman Badler — 12/2008

Selected Talks

Teaching Computer Graphics Inside a Browser: WebGL and Three.js — 07/2016
SIGGRAPH Educators Panel
Ed Angel, Dave Shreiner, Eric Haines, and Patrick Cozzi

The Open Cesium 3D Tiles Specification — 07/2016
Web3D
Patrick Cozzi and Sean Lilley

3D Tiles: Beyond 2D Tiling — 05/2016
FOSS4G NA
Sean Lilley and Patrick Cozzi

Growing an Open-Source Community: Lessons Learned from Cesium — 05/2016
FOSS4G NA
Patrick Cozzi

glTF working group updates 03/2016
WebGL + glTF BOF, GDC
Patrick Cozzi and Tony Parisi

3D Tiles: streaming massive heterogeneous 3D geospatial datasets 03/2016
OGC TC Meeting Closing Plenary
Patrick Cozzi

The State of WebGL and glTF 09/2015
The Graphical Web
Patrick Cozzi

Preparing Students for Industry Using Open Source and GitHub 08/2015
SIGGRAPH
Harmony Li and Patrick Cozzi

What's new in Cesium: the open-source alternative for 3D maps 09/2014
FOSS4G

Teaching Intro and Advanced Graphics with WebGL 08/2014
SIGGRAPH
Patrick Cozzi and Ed Angel

Cesium, CZML, and glTF 08/2014
Web3D

Using Multiple Frustums for Massive Worlds 07/2013
SIGGRAPH

Cesium: 3D Maps on the Web 05/2013
FOSS4G NA

Cesium: WebGL for Globes and Maps 08/2012
SIGGRAPH WebGL BOF

WebGL for Dynamic Virtual Globes 03/2012
WebGL Camp Orlando

Under the Hood of Virtual Globes 05/2011
COM.Geo

Introduction to Massive Model Rendering 03/2009
Villanova University Computer Science Colloquium

Industry Service

I3D 2017
Paper committee

Manning 2016
Advise on graphics book proposals

FedGeoDay 2016
Program Chair

3D In the Cloud: What Does it Mean? 04/2016
Moderator

FOSS4G NA 2016 2015-2016
Conference Committee

Addison Wesley 2014 - Present
Advise on graphics book proposals

Journal of Computer Graphics Techniques 09/2013 - Present

Editorial Board

Khronos 01/2013 - Present
3D Formats Working Group

CRC Press 2012 - Present
Advise on graphics book proposals

SIGGRAPH Asia 2014
Course reviewer

International Journal of Digital Earth 2014-2015
Paper reviewer

IBM Journal of Research and Development 2014
Paper reviewer

Interactive Computer Graphics: A Top-Down Approach 2013
Technical book review

Udacity CS291: Interactive 3D Graphics 2013
Technical course review

COM.Geo 2012
Paper Reviewer

COM.Geo 2011
Paper Session Chair

Graphics Models Journal 2010
Reviewer

Patents

Visualization of field of view obstruction by an ellipsoid 09/2016
US 9,449,424

System and method for data rendering and transformation images in 2- and 3- dimensional
US 9,153,063

System and method for fast, secure removal of objects from disk storage 05/2007
US 7,216,207