Alexandr Kuznetsov

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Education

University of California, San Diego

PhD Candidate in Computer Science GPA: 3.87 Sept. 2016 - June 2022 (Expected)
MS in Computer Science Sept. 2016 - June 2019

- Advisor: Prof. Ravi Ramamoorthi
- Research interests:
  - Using deep learning to accelerate physically-based rendering in Computer Graphics
  - Algorithms for denoising and reconstruction of Monte Carlo renderings using deep learning
  - Neural representation of materials and scenes for 3D graphics

New York University

Bachelor of Arts in Computer Science and Mathematics GPA: 3.873 Sept. 2011 - May 2014

- Computer Science Prize for Academic Excellence
- Presidential Honors Scholar

Publications

- NeuMIP: Multi-Resolution Neural Materials
  Alexandr Kuznetsov, Krishna Mullia, Zexiang Xu, Miloš Hašan, and Ravi Ramamoorthi
  SIGGRAPH 2021
- Hierarchical Neural Reconstruction for Path Guiding Using Hybrid Path and Photon Samples
  Shilin Zhu, Zexiang Xu, Tiancheng Sun, **Alexandr Kuznetsov**, Mark Meyer, Henrik Wann Jensen, Hao Su and Ravi Ramamoorthi
  SIGGRAPH 2021
- Learning Generative Models for Rendering Specular Microgeometry
  Alexandr Kuznetsov, Miloš Hašan, Zexiang Xu, Ling-Qi Yan, Bruce Walter, Nima Kalantari, Steve Marschner, and Ravi Ramamoorthi.
  SIGGRAPH Asia 2019
- Deep Adaptive Sampling for Low Sample Count Rendering
  Alexandr Kuznetsov, Nima Khademi Kalantari, and Ravi Ramamoorthi.
  Proceedings of the Eurographics Symposium on Rendering, 2018
- Multiple Axis-Aligned Filters for Rendering of Combined Distribution Effects
  Lifan Wu, Ling-Qi Yan, **Alexandr Kuznetsov**, Ravi Ramamoorthi.
  Proceedings of the Eurographics Symposium on Rendering, 2017

Work Experience

Adobe Research

Research Intern June 2021 - Sep. 2021

- Undisclosed deep learning/rendering research

Facebook Reality Labs - Research

Research Intern June 2020 - Oct. 2020

- Researched a super-sampling reconstruction algorithm for rendering
- Developed a differentiable PyTorch plugin written in CUDA for forward reprojection
- Extensive temporal reuse and reprojections

NVIDIA Research

Research Intern June 2019 - Sep. 2019

- Researched an accelerating rendering algorithm using machine learning for real-time graphics
- Created a render-in-the-loop training system using PyTorch and GPU renderer Falcor

Adobe Research
Research Intern June 2018 - Sep. 2018

- Created deep online learning algorithm for optimizing rending parameters
- Developed an asynchronous system for training and inferencing of neural networks in batches in the context of path-tracing.

Yahoo! Software Developer Engineer, Associate Jan. 2015 - Sep. 2016

- Created and improved Apache Traffic Server plugins using Lua for HTTP traffic routing and caching

Undergraduate Research Assistant, NYU
Advisor: Prof. Denis Zorin

- Implemented integral methods for solving incompressible fluids in Matlab
- Code to accurately integrate, differentiate curves, find centers of mass of objects defined by curves.
- Integrated Stokes kernels with O(N) Direct Solver for Integral Equations on the Plane

Blender Foundation
Google Summer of Code project May 2013 - Sept. 2013

- Developed code for parallel video processing on CPU and GPU with OpenCL
- Significantly improved the video editor performance on multicore machines with GPUs

Blender Foundation
Google Summer of Code project May 2012 - Sept. 2012

- Ported the software (C, C++) to Android platform using NDK's standalone toolchain
- Added OpenGL ES for drawing 3D graphics, primarily in the game engine on mobile devices

Skills

- Programming Languages: C, C++, CUDA, OpenCL, Python, Matlab, Lua
- Tools and Frameworks: PyTorch, OptiX, Visual Studio, git, CMake, Unix tools, Android NDK