Xilong(Logan) Zhou

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Education

PhD in Computer Science and Engineering, **Texas A&M University** *August 2018 – Present*

MS in Petroleum Engineering, **Texas A&M University** (GPA 4.0/4.0) *August 2014 – August 2016*

BE in Petroleum Engineering, **China University of Petroleum Beijing** (GPA 90/100) *August 2010 – June 2014*

Research Interest

I am interested in the application of deep learning technique in computer graphics, especially in material appearance modeling and rendering.

Research Experience

Estimation of the reflectance properties from multiple images *June 2020 – Present*

- Propose a novel optimization strategy using CNN to estimate the reflectance properties from multiple input images

Estimation of the reflectance properties from a single image *June 2019 – September 2020*

- Train a CNN and cGAN framework using perceptual loss to estimate the reflectance properties of planar materials from a single input image
- Propose a hybrid training strategy to address the gap between synthetic and real images

Study adsorption property of nanoparticle used in enhanced oil recovery *January 2015 – August 2016*

- Propose a bilayer adsorption model of nanoparticles

Publication

Xilong Zhou, Nima Kalantari. "Adversarial Single-Image SVBRDF Estimation with Hybrid Training" (Conditionally accepted at Eurographics 2021)

Xilong Zhou, Jenn-Tai Liang, Corbin D Andersen, Jiajia Cai and Ying-Ying Lin. "Enhanced Adsorption of Anionic Surfactants on Negatively Charged Quartz Sand Grains Treated with Cationic Polyelectrolyte Complex Nanoparticles". Colloids and Surfaces A: Physicochemical and Engineering Aspects, 553, 397-405, September (2018).

Selected Projects

Computational photography & digital image

- Image alignment based on SSD metric; gradient-based image blending; seam carving using dynamic programming; camera calibration and HDR reconstruction; poisson image matting.

Image synthesis & computer graphics

- Implement ray tracer algorithm from scratch to simulate color bleeding, depth of field, reflection/refraction, motion blur, environment mapping, texture mapping, etc;
- Simulate appearance of different materials using spectrum and Cook-Torrance BRDF model;
- Implement radiosity algorithm, volume rendering and mipmap texturing with anisotropic filters.

Physically based modeling

- KD-tree based particle system simulation, flocking system, rigid body simulation, spring structure simulation and fluid simulation.

Deep learning for computer graphics

- Implement paper "deep illumination: approximating dynamic global illumination with generative adversarial networks".

Teaching

PETE 612: Unconventional Oil and Gas, Teaching Assistant, Fall 2015
PETE 321: Formation Evaluation, Teaching Assistant, Spring 2016
CSCE 222: Discrete Structure for Computing, Teaching Assistant, Fall 2018, Fall 2019, Spring 2020
CSCE 441: Analysis of Algorithm, Teaching Assistant, Summer 2019
CSCE 421: Machine Learning, Teaching Assistant, Fall 2020

Honors & Awards

- Student Representative in “Petro Bowl” Contest in ATCE *October 2013*
- National First Prize of National Petroleum Engineering Design Competition *May 2013*
- Honorable Mention of Mathematical Contest in Modeling (International) *April 2013*
- National Second Prize of National Mathematics Modeling Contest *September 2012*

Programming Skills

Python, Pytorch, Cuda, C++, Matlab, Mathematica, Javascript

Extra-Curriculum Activities

Volunteer in the International Triathlon World Championship (2011)
Beijing college student art performance (2010)