Kewei XU

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Hi there !

I am a Ph.D. student in computer graphics. My current research focuses on physically-based(photo-realistic) rendering and appearance modeling, particularly mixed materials.

Education

University of Poitiers - XLIM UMR CNRS 7252, Poitiers, France   Mar 2023 – present
- Ph.D. in Computer Science (Computer Graphics)
- **Advisors:** Mickaël Ribardière, Benjamin Bringier, Daniel Meneveaux

Sorbonne University, Paris, France   Sept 2019 – Dec 2022
- Master of Science in Computer Science and Technology (Computer Vision) - *with distinction (mention bien)*

Sorbonne University, Paris, France   Sept 2018 – Sept 2019
- Bachelor of Science in Computer Science and Technology - *with distinction (mention bien)*

IUT of Orsay, Paris-Sud University, Orsay, France   Sept 2016 – Sept 2018
- University Diploma of Technology (DUT) in Computer Science - *with high distinction (mention très bien)*

Experience

Research Intern, LINEACT CESI – Rouen, France   Feb 2022 – Sept 2022
- **Advisors:** Nicolas Ragot, Yohan Dupuis
- Bring computer vision solutions into industrial digital twins by selecting high-score viewpoints to boost recognition reliability and efficiency. We propose a scoring mechanism that chooses optimal views for object recognition and extends to industrial assembly-step recognition; it outperforms random views on small datasets and stays robust under simulated robotic-arm viewpoint offsets up to $10°$. Traditional clustering yields F1 score 0.6, while MobileNet with transfer learning reaches 0.9; for datasets with highly similar classes, image similarity can be fused into the score to improve discrimination.

Software Engineer Intern, Sichuan Normal University – Sichuan, China   Apr 2018 – Jul 2018
- Built full-stack features for a student registration system, Implemented form validation, authorization, improving submission reliability and data integrity. Optimized API and database design to reduce latency on frequent operations.

Publications

A discrete polydisperse anisotropic BSDF model based on the micrograin framework   In submission
Kewei Xu, Simon Lucas, Mickaël Ribardière, Benjamin Bringier, Pascal Barla

Real surface measurement and virtual gonioradiometer for road appearance prediction
Kewei Xu, Mickaël Ribardière, Benjamin Bringier, Daniel Meneveaux
- Published in *MAM - MANER London, 2024*

Virtually measuring layered material appearance
Kewei Xu, Arthur Cavalier, Benjamin Bringier, Mickaël Ribardière, Daniel Meneveaux
- Published in *Journal of the Optical Society of America A, 2024*

View selection for industrial object recognition
Kewei Xu, Nicolas Ragot, Yohan Dupuis
- Published in *IECON 2022 - 48th Annual Conference of the IEEE Industrial Electronics Society, 2022*

Personal Mini-Projects

A real-time rasterizer little demo based on bgfx Project page
- Implementation of a little real-time rasterization render based on bgfx. Supports orbit/pan/zoom camera via mouse and keyboard, textured object rendering with skybox/environment maps, a selectable lighting pipeline (Blinn–Phong or PBR with IBL), and real-time shadows using shadow mapping.

Implementation of variance soft shadow mapping Project page
- Implementation of Variance Soft Shadow Mapping (VSSM) in OpenGL and compares it with some other shadow rendering techniques like percentage-closer filtering (PCF) and percentage-closer soft shadows (PCSS).

Super-resolution for downscaling on oceanographic fields Project page
- I frame the downscaling of oceanographic fields as a super-resolution task and address it with a deep learning approach. Building on the classical SRCNN. I optimize both the network architecture and the data pipeline, and achieve satisfactory results on the NATL60 dataset.

Skills

Programming Languages: C/C++, Python, GLSL

Softwares: Mitsuba, OpenGL, Pytorch, LaTex, Blender

Languages: English (Fluent), French (Commonly used in daily life), Chinese (Native speaker)

Hobbies: Motion design and Video editing using Adobe After Effects and Photoshop YouTube channel