Meng-Lin Wu

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https://menglin-wu.github.io/
https://scholar.google.com/citations?hl=en&user=egUzoygAAAAJ

Education

Purdue University West Lafayette, Indiana
PhD, Computer Science 2019
Advisor: Voicu Popescu
Thesis: Occlusion management in conventional and head-mounted display visualization through the relaxation of the single viewpoint/timepoint constraint

National Taiwan University Taipei, Taiwan
BS/MS, Physics 2007
Advisor: Yee Hsiung
Thesis: Search for K^0_L decay to light pseudoscalar sgoldstino at E391a

Research Areas

Computational Photography

- Bokeh
- HDR imaging
- Blurring/deblurring
- Multi-perspective acquisition and rendering

Computer Graphics

- AR/VR
- 3D photography

Work Experience

Staff Engineer at **Qualcomm Technologies, Inc.**, San Diego, California 2019 – present

- Drive quantization-aware ML training algorithms development of a team of 4. Made yearly releases to internal product teams. Manage feature requests from product teams.
- Mentored graduate students and interns on image restoration, object detection, and semantic image editing.
- Patent filed / received in the areas: i) 3D photography, ii) light field, depth, and HDR sensing, iii) image segmentation and object detection, iv) diffusion models.
- Shipped the first always-sensing mobile camera feature.

Research Intern at **Facebook Reality Labs**, Redmond, Washington 2018

- Researched ML-based adaptive ray casting and sparse image denoising / reconstruction.

Autonomous Driving Engineering Intern at **nuTonomy**, Cambridge, Massachusetts 2017

- Simulated sensors and vehicle dynamics.

Software Developer Intern at **Google**, Montréal, Canada 2016

- Implemented OpenGL ES 3 features and helped open-source SwiftShader (https://github.com/google/swiftshader).

Intern at **VMware**, Palo Alto, California 2014

- Implemented OpenGL 3 features and helped release OpenGL 3.3 in VMware Workstation 12 and Fusion 8.
- Contributed to the Mesa 3D graphics library (https://gitlab.freedesktop.org/mesa/mesa).

Game Planning Specialist at **International Games System**, Taipei, Taiwan 2009 – 2010

- Developed a physics engine for arcade racing games.

Academic Experience

Computer Graphics and Visualization Lab, Purdue University, West Lafayette, Indiana 2012 – 2019

- Improved AR/VR navigation efficiency with novel multiperspective approach.
- Rendered 3D scenes from multiple disjoint viewpoints to a single image.
- Developed real-time free-viewpoint video system using RGBD streams.

Publications

Consistent and multi-scale scene graph transformer for semantic-guided image outpainting
CA Yang, ML Wu, RA Yeh, YCF Wang
International Conference on Image Processing (ICIP) 2023

Direct handheld burst imaging to simulated defocus
ML Wu, VRK Dayana, H Hwang
International Conference on Image Processing (ICIP) 2022

Scene graph expansion for semantics-guided image outpainting
CA Yang, CY Tan, WC Fan, CF Yang, ML Wu, YCF Wang
Conference on Computer Vision and Pattern Recognition (CVPR) 2022

Robust image outpainting with learnable image margins
CY Tan, CA Yang, SF Chen, ML Wu, YCF Wang
International Conference on Image Processing (ICIP) 2021

Automatic deictic gestures for animated pedagogical agents
SRK Kappagantula, N Adamo-Villani, ML Wu, V Popescu
IEEE Transactions on Learning Technologies, 2019

RGBD temporal resampling for real-time occlusion removal
ML Wu, V Popescu
SIGGRAPH Symposium on Interactive 3D Graphics and Games (I3D) 2019

Anchored multiperspective visualization for efficient VR navigation
ML Wu, V Popescu
International Conference on Virtual Reality and Augmented Reality (EuroVR) 2018

Efficient VR and AR navigation through multiperspective occlusion management
ML Wu, V Popescu
IEEE Transactions on Visualization and Computer Graphics, 2017
(*IEEE Virtual Reality Conference 2018* invited oral presentation)

Digital learning activities delivered by eloquent instructor avatars: scaling with problem instance
S Anasingaraju, ML Wu, N Adamo-Villani, V Popescu, SW Cook, M Nathan, M Alibali
SIGGRAPH ASIA 2016 Symposium on Education

Multiperspective focus+context visualization
ML Wu, V Popescu
IEEE Transactions on Visualization and Computer Graphics, 2016

Animation killed the video star
V Popescu, N Adamo-Villani, ML Wu, SD Rajasekaran, MW Alibali, M Nathan, SW Cook
Proceedings of CHI 2014 Workshop on Gesture-based Interaction Design: Communication and Cognition

Study of the $K^0_L \to \pi^0\pi^0\nu\bar{\nu}$ decay
R Ogata et al., *Physical Review D, 2011*

Search for the decay $K^0_L \to 3\gamma$
YC Tung et al., *Physical Review D, 2011*

Experimental study of the decay $K^0_L \to \pi^0\bar{\nu}\nu$
JKA et al., *Physical Review D, 2010*

Search for a light pseudoscalar particle in the decay $K^0_L \to \pi^0\pi^0$ X
YCT et al., *Physical Review Letters, 2009*

Search for X (214) in $K^0_L \to \pi^0\pi^0$X ($X \to \mu^+\mu^-$) using back-anti counter at the E391a experiment
R Ogata et al., *2009 KAON International Conference*

Search for the decay $K^0_L \to \pi^0\bar{\nu}\nu$
JKA et al., *Physical Review Letters, 2008*

Shipped Games

Speed Driver 4: World Fever (2012)

Power Truck (2011)

Speed Rider 2 (2011)

Speed Driver 3: Crash Hour (2010)

Reviewer

IEEE Transactions on Visualization and Computer Graphics
IEEE Visualization Conference
IEEE Virtual Reality Conference
IEEE International Symposium on Mixed and Augmented Reality
IEEE International Conference on Image Processing
IEEE International Conference on Computer Vision
IEEE Computer Graphics and Applications
SIGGRAPH
SIGGRAPH Asia
Eurographics
Eurographics Symposium on Rendering
Computer Animation and Virtual Worlds

Awards

Bilsland Dissertation Fellowship, Purdue University Graduate School