

YIQIN ZHAO

100 Institute Rd – Worcester, MA, 01609
(+1) (508)736-5839 ◊ yiqinzhao@outlook.com

RESEARCH INTERESTS

My research interest lies in the board area of future mobile system design for mobile augmented reality (AR). My recent research has a strong focus on environment lighting estimation for mobile AR devices.

EDUCATION

Worcester Polytechnic Institute , Worcester, MA, USA Ph.D. in Computer Science	<i>Aug. 2021 - June 2024</i>
Worcester Polytechnic Institute , Worcester, MA, USA M.S. in Computer Science	<i>Aug. 2019 - June 2021</i>
Tianjin Normal University , Tianjin, China B.Eng. in Software Engineering	<i>Sept. 2015 - June 2019</i>

SELECTED PUBLICATIONS

- **Yiqin Zhao**, and Tian Guo. “**Xihe: A 3D Vision-based Lighting Estimation Framework for Mobile Augmented Reality**” In proceedings of the proceedings of the 19th annual international conference on mobile systems (MobiSys’21).
- **Yiqin Zhao**, and Tian Guo. “**PointAR: Efficient Lighting Estimation for Mobile Augmented Reality.**” In proceedings of the 16th European Conference On Computer Vision (ECCV’20).
- Ziping Zhao, Zhongtian Bao, **Yiqin Zhao**, Zixing Zhang, Nicholas Cummins, Zhao Ren, Björn W. Schuller. “**Exploring Deep Spectrum Representations via Attention-Based Recurrent and Convolutional Neural Networks for Speech Emotion Recognition.**” IEEE Access, vol. 7, pp. 97515-97525, 2019

RESEARCH & INDUSTRIAL EXPERIENCE

Worcester Polytechnic Institute , Worcester, MA, USA Xihe: Efficient Mobile AR System for Spatially-variant Lighting Estimation <i>Research Assistant, Advisor: Prof. Tian Guo</i>	<i>Mar. 2019 - Present</i>
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- This project resulted in one MobiSys 2021 paper.
- Co-designed lighting estimation policies and deep learning model to optimize network transfer and end-to-end inference time.
- Designed and implemented a working prototype with an edge-based inference server and an Unity-based iOS app, including a on-device real-time point cloud GPU processing pipeline.

Worcester Polytechnic Institute , Worcester, MA, USA PointAR: Efficient Lighting Estimation for Mobile Augmented Reality <i>Research Assistant, Advisor: Prof. Tian Guo</i>	<i>Aug. 2019 - Mar. 2020</i>
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- This project resulted in one HotMobile’20 poster and one ECCV’20 paper.
- Proposed a spatially-variant lighting estimation pipeline for mobile AR with 3D vision techniques and point cloud-based neural networks.
- Improved estimation accuracy while substantially reduced model complexity.

Worcester Polytechnic Institute, Worcester, MA, USA
NSF Proposal for Lighting-based 3D Face Authentication
Research Assistant, Advisor: Prof. Tian Guo and Prof. Sheng Wei

Aug. 2019 - Sept. 2020

- Proposed an attack that combines real-time lighting estimation (based on my prior work PointAR) and rendering techniques to achieve the low-latency and realistic visual effect requirement of state-of-the-art face authentication and liveness detection systems.

Baidu Inc., Beijing, China
Software Engineering Intern

July, 2018 - Sept., 2018

- Worked as a software engineering intern for the mobile application front-end development for Baidu smart speaker (similar Amazon Alex) with hybrid web technologies.
- Closely worked with UI designers and component infrastructure team for designing and developing applications and user interface component library.
- Designed and implemented internal tools for improving testing and debugging workflow efficiency.

Tianjin Normal University, Tianjin, China
Undergraduate Research Assistant, Advisor: Prof. Ziping Zhao

Dec. 2016 - May 2018

- *Research topic:* affective computing and applied machine learning.
- Designed novel deep neural networks that effectively learns the spatial and temporal features of human emotions from speech audio spectrogram signals.

AWARDS AND SCHOLARSHIPS

China Collegiate Computing Contest, Apple Inc., China
This contest is held by Tsinghua University, Zhejiang University and Apple, Inc China to students from the great China area for developing and designing innovative mobile applications.

- 2017 national third prize, October 2017, top 6% *Oct. 2017*
- 2016 national third prize, October 2016, top 10% *Oct. 2016*

Wang Kechang Culture and Technology Innovation Scholarship, Tianjin Normal University
Fewer than 1% *Sept. 2018*

Tianjin Normal University Scholarship, Tianjin Normal University

- 2018 - 2019 academic first grade scholarship, top 10% *May 2019*
- 2017 - 2018 academic year top grade scholarship, top 5% *Sept. 2018*
- 2016 - 2017 academic year second grade scholarship, top 20% *Sept. 2017*
- 2015 - 2016 academic year first grade scholarship, top 10% *Sept. 2016*

LEADERSHIP EXPERIENCE

Founder and President of TJNU iOS Club, Tianjin Normal University *2017 - 2018*

- Organized biweekly mobile application development and design workshops on campus.
- Led collaborative student activities with Apple Inc. at the local Apple Store.
- Led team to attend national iOS Club summer and winter camps held by Apple Inc.
- Developed the Tianjin Normal University iOS Club to be the largest and most influential student technology club in the college.

SKILLS

- Proficient in system programming with Python, JavaScript, C# and Swift
- Proficient in data science technologies: NumPy, Numba, PyTorch and TensorFlow
- Familiar with modern GPU programming: Metal, WebGL, shader and CUDA