

EMPLOYMENT

Machine Learning Engineer **Apple Inc.** **Oct 2016 – Present**

- Worked on development and evaluation of Vision and Machine Learning solutions for Apple Vision Pro.
- Developed directional light estimation in ARKit, a framework shipped with iOS 11.

Graduate Student Researcher **University of California, San Diego** **Spring 2015 – Summer 2016**

Visual Computing Center (Dr. Ravi Ramamoorthi)

- Developed a single view 3D reconstruction (SVR) system for human faces.
- Predicted cast shadows on the face; significantly reduced reconstruction error due to shadowing.
- Designed and implemented a hybrid of parametric model and shape from shading; captured local details while preserving global shape.

Research Assistant **LUMS, Pakistan** **Jun 2012 – Jun 2014**

Computer Vision Group (Dr. Sohaib Khan)

- Performed quantitative stability testing of in-house single view reconstruction algorithm.
- Added constraints on the search space; reduced false positives by 32%.

EDUCATION

M.S. Computer Science **University of California, San Diego** **Aug 2014 – July 2016**

- GPA: 3.78

B.S. Electrical Engineering **LUMS, Pakistan** **Sep 2008 – May 2012**

- In-major GPA: 3.73, cGPA: 3.67

COURSE PROJECTS

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- **Convolutional Neural Network (2015)**. Developed a reconfigurable CNN training framework from scratch.
 - **Pre-computed Radiance Transfer (2015)**. Real-time rendering system; pre-computes geometric information as spherical harmonics and renders object under dynamic environment maps at more than 100 fps.
 - **Expression Retargeting (2011)**. Project facial expression from sparse MOCAP data onto a dense 3D character using spatio-temporal basis.

ADDITIONAL EXPERIENCE AND AWARDS

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- **Teaching Assistant (2009 – 2014)**: Assisted in Computer Vision, Computer Networks, Introduction to Programming (C++), Computational Problem Solving (MATLAB).
 - **Media Coordinator (2011)**: Led the media cell at *Young Leaders' Summit* and secured print media coverage.
 - **Best project (2009)**: 2nd prize for best course project in freshman year for Speech Recognition system.
 - **Dean's Honor List (2008-12)**: Remained on Dean's List throughout the undergraduate period.
 - **3rd Place nationwide (2008)**: Gold medal in International Math's Kangaroo Contest (Pakistan).

TECHNICAL SKILLS

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- Pytorch, Tensorflow, Python, C++, C, MATLAB, OpenGL, Bash, Verilog, JavaScript, HTML, CSS
 - Deep Learning, CNNs, Knowledge Distillation, Scene Understanding, 3D Reconstruction, Computer Vision, Neural Nets, Artificial Intelligence, GPU Programming, Image Processing