

**EMPLOYMENT**

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

- Worked on development and evaluation of Vision and Machine Learning solutions.
- 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 (Prof Ravi Ramamoorthi)

- Implemented fully automatic, state of the art 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 – Jan 2014**

Computer Vision Group

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

**EDUCATION**

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

- GPA: 3.78

**B.S. Electrical Engineering** **LUMS, Pakistan** **May 2012**

- In-major GPA: 3.73, cGPA: 3.67

**Relevant Courses:**

- Computer Vision I & II
- Real-time High Quality Rendering
- Advanced Computer Graphics
- Neural Networks, Pattern Recognition
- Embedded Image Processing
- Probabilistic Reasoning and Learning
- Advanced Algorithms
- Advanced Computer Architecture
- Graduate Operating Systems

**PROJECTS**

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- **Expression Retargeting (2011).** Projects facial expression from sparse MOCAP data onto a dense 3D character using spatio-temporal basis.
- **Convolutional Neural Network (2015).** A reconfigurable CNN framework with accuracy>91% on MNIST.
- **Pre-computed Radiance Transfer (2015).** Real-time rendering system; pre-computes geometric information and renders object under dynamic environment maps at more than 100 fps.

**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):** 2<sup>nd</sup> 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.
- **3<sup>rd</sup> Place nationwide (2008):** Gold medal in International Math's Kangaroo Contest (Pakistan).

**TECHNICAL SKILLS**

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- C++, C, MATLAB, OpenGL, Python, Bash, Verilog, MySQL, JavaScript, HTML, CSS
- 3D Reconstruction, Computer Vision, Neural Nets, Artificial Intelligence, GPU Programming, Image Processing