



Research in Academia and Industry from the Lens of Digital Camera

Farhan Baqai
Apple Inc.

IEEE SPS Distinguished Seminar

April 26, 2024, 10:30 AM, PGSC 105A&B

Zoom: <https://purdue-edu.zoom.us/j/91323062401> ~ Meeting ID: 913 2306 2401

Abstract: For a long time society had the perception that research is important for its advancement. This led to the creation of funding agencies and research laboratories. Some of the fundamental discoveries that fueled the technology revolution were either supported by these organizations or developed at a research laboratory. Progressively government funding has declined and research organizations have either faded away or operate with a reduced agenda. So it is imperative for industry and academia to evolve beyond the current paradigm especially in areas of mutual interest. One such area is digital camera. In this talk, we review the evolution of digital camera from camera obscura to mobile cameras. We compare practices and assumptions in academia and industry, and briefly look at a few signal processing solutions that we have developed over the years for problems in digital camera. We present recent results to show the progress that has been achieved in computational photography and conclude with challenges and opportunities.

Bio: Dr. Farhan Baqai is a Senior Research Manager at Apple Inc. where he leads digital photography algorithm development. Previously he worked at Sony and Xerox Corporation. His research and product contributions span digital camera image processing, machine learning, computer vision, stereoscopic image processing, statistical signal processing, digital printing, and radar imaging. His innovations have shipped in more than a billion devices which are used to capture trillions of images and videos every year. More recently, he led the research and cross-functional development effort that resulted in Night mode in iPhone cameras which has made Apple a world leader in mobile low-light photography.

Dr. Baqai is an IEEE Fellow, a Deputy Editor in Chief of IEEE Transactions on Image Processing, and a member of IEEE Signal Processing Society Image, Video, and Multidimensional Signal Processing Technical Committee. Dr. Baqai has authored several peer-reviewed journal articles, conference papers, book chapters, and holds 39 issued US patents with more than 15 US patents pending. In 2020, Purdue University School of Electrical and Computer Engineering conferred on him the Outstanding Electrical and Computer Engineer award.

Host: Stanley Chan, stanchan@purdue.edu

ECE DISTINGUISHED LECTURER SEMINAR