Brian Cabral

Leader Architect Innovator

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Key Leadership Achievements

Facebook Surround 360.
⊗ Spearheaded the design and engineering of the world's first 360 6DoF cinematic video system.

Tegra GPU.
⊗ Led engineering team that delivered the first SOC programble GPU to mobile platforms.

NV50 GPGPU.
⊗ Drove engineering the world's first fine grained stream GPGPU core in less than 18 months.

Major Technical Accomplishments

Computational Imaging.
⊗ Shaped early, major computational imaging products and designs.

Graphics as Computation.
⊗ Pioneered the use of graphics pixel and frame buffer operations for general computation.

Line Integral Convolution.
⊗ Invented a seminal and novel vector imaging technique known as LIC.

Shipped Products

VR	Facebook Surround 360 and Manifold cinematic video camera systems.
Imaging	Tegra ISP2/3 HW and Algorithms, Lytro LightField SW
GPGPUs	Tegra1/2/3/4, G80, G90
Graphics	InfiniteReality3, OptimizerGL, VolumeRenderer

Skills

Leadership
- Able manager of large existing projects: 50-100 people.
- Builder of R&D groups from the ground up.
- Accomplished manager of very technically complex projects.
- Proficient hiring, reviewing, and organizing leader of a wide variety of technical personnel.
- Skilled builder and maintainer of customer technical and business relationships.
- Capable presenter of technical material to wide audiences.

Technical
- HW & SW architect — designing numerous systems from scratch.
- Very proficient at converting recent research into products.
- Skilled developer of mathematically rich systems.
- Capable tool and infrastructure designer and implementor.
- Conversant in numerous computer languages – particularly C++ and Python.

2014–Present **Director of Engineering**, *Facebook*.
Driving, developing, and shaping Facebook's VR capture.

Responsible for Facebook Surround 360 Omnidirectional and Manifold 6DoF VR video camera systems. Drove Facebook's VR capture and computational imaging initiatives and hiring at the executive level. Lead and shipped advanced computation imaging features across Facebook's products and infrastructure including: auto enhance filters and JPEG compression improvements.

2012–2014 **VP of Engineering**, *NVIDIA*.
Galvanized NVIDIA's imaging strategy at the executive level.

Worked with CEO and his staff to shape and define NVIDIA's mobile imaging strategies. Drove first Always-On-HDR effort from early inception to complete SW and HW implementation. In the same time frame delivered first 1+ Gigapixel mobile imaging HW system. Championed the Chimera effort designed to seamlessly unify computational imaging in a heterogeneous computational system.

2010–2012 **Director of Engineering**, *Lytro*.
Shaped and managed core imaging algorithms and insured image quality.

Leader of the algorithm team that produceed the worlds first consumer LightField camera. Shaped prototype SW and HW into a shipping product in less than 18 months. Developed and implemented innovative offline white balance algorithm and extended dynamic range processing.

2002–2010 **Sr. Director of Engineering**, *NVIDIA*.
Defined and drove mobile imaging and graphics HW and algorithms teams.

Delivered 4 major HW architectures in the area of GPU and image processing. Managed and contributed to major infrastructure initiatives to improve engineering efficiency and time to market. Led and developed several key imaging algorithm efforts in the area of color processing and noise reduction. Helped specify and drive the SPA assembly language GPGPU Instruction Set Architecture(ISA).

2000–2002 **VP of Engineering**, *iKuni (AiLive)*.
Built technical team and company infrastructure from scratch.

Starting with one employee built up a world-class machine learning team of ten top researchers. Built out and managed company software development infrastructure. Drove technology development of a multi-agent off-line and on-line learning which eventually became the basis of the WiiMotionPlus. Conducted complex game learning training sessions.

1993–2000 **Director of Engineering**, *Silicon Graphics Computer Systems*.
Advanced and strengthened flagship graphics HW and SW products and teams.

Directed 70+ person flagship hardware and software graphics team that produced the Reality Engine 3 graphics system. Architected and led the Optimizer product and team – the world's first large model scene graph based modeling and visualization tool. Developed tangent space rendering algorithm – the first true hardware, texture mapping based bump mapping. Created one of the first texture mapping hardware based volume rendering software leading to key business deals and contributing to the scientific research community. Pioneered the early notion of using the frame buffer as a computing plane which led to programmable pixel shading.

━━━━━ Patents

Holder of 95 patents: 54 issued, 41 filed.

━━━━━ Education

BS, Computer Science, *California State University, Stanislaus*.
MS, Computer Science, *University of California, Davis*.