Eric V. Powers

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Objective	**Senior Software Engineer**

Profile	Capable software engineer in advanced graphics, web, and embedded disciplines.
	Architect of production pipeline in use by a major studio for more than a decade.
	Accomplished mentor of technology for 10+ years.

Experience & Accomplishments

Designed and implemented a teleoperation calibration technique for humanoid robotics.

Designed and implemented a binocular vision system for humanoid robotics and machine learning.

Developed a facial recognition kiosk for fast food restaurants.

Architected and implemented HTML5 + Javascript editor with drag/drop, undo/redo, templates.

Developed Django/Python/Apache/Linux, CDN and security middleware on AWS.

Developed iPad video wall application with HTML5, Javascript, and ObjectiveC.

Developed virtual world application with Java client and Java Glassfish server.

Developed autonomous robotics stereo machine vision system in Python/C++/OpenCV.

Implemented image processing system in GLSL/C++ for night vision. Imaging pipelines with GLSL benefit from using the fragment processing capabilities of the GPU for extremely high throughput.

Awarded patent #9503623 for color night vision de-noise technique.

Developer of software system for planetary body and spacecraft simulation with Oren-Nayar shading model in GLSL and geometric processing algorithms in OpenCL, user application in Objective-C.

Architect of production pipeline, including initial concept, proposals, block diagrams, requirements, roadmap, architecture and design documents, bidding, budgeting, reporting hierarchy, roles and responsibilities, resource allocation, assignments, priorities, tracking, training and documentation, support teams, and maintenance planning.

Education	**B.S., Information Technology,** University of Phoenix, 2006 Graduated with Honors (3.80 GPA)

References	Daniel Nilsson, manager, Vista, California, (858) 947-8339.
	Dr. Phil Watts, Caltech, Irvine, California, (562) 607-2132.
	Glenn Smith, Caltech, Mighty Ant, Pasadena, California, (626) 817-2702.

Software Engineer, *Giant AI*, Glendale
　　Computer Vision:
- o　Designed a dual camera binocular foveal vision system comparable to human vision.
- o　Prototyped remote streaming, control API, logging, and other features in Python with ZeroMQ and GStreamer.
- o　Implemented system in C++17, using ZeroMQ, JSON-RPC, and custom GStreamer elements, as well as Python bindings, GTest unit and integration tests.

　　Robot Teleoperation:
- o　Conceptualized a novel technique for calibrating IMUs to a common 3d space without magnetometer or any other sensor or apparatus.
- o　Implemented a remote teleoperation system in Python, including a custom VR display application, h265 encoded dual camera streams, and head, torso, arm, and hand/finger pose over a WAN.

2021-present

Software Engineer, *Mighty Ant Dataworks*, Pasadena
　　Data Management:
- o　Developed a web-based data management system similar to FileMaker.

　　Facial Recognition Kiosk:
- o　Developed HTML and native camera pipelines, face detection, face matching, with Python, Javascript, Java, C# and C++.
- o　Developed a retail ordering and menu management system with Python and Javascript.

　　In-Theater Gaming:
- o　Developed in-theater gaming system for ticketing, social networking, team management, and leaderboard in Python and Javascript.
- o　Systems management: AWS, CDN, autoscaling.

2015-2021

Software Engineer, *Readz/Star Labs Ltd*, Woodland Hills
　　Server cloud:
- o　Python, Django, Apache/Linux for production, Mac OSX for development, Aptana Studio with PyDev.
- o　Developed Django system for one-button Amazon Cloud updates, including a model differencing engine that allows developers to specify incremental changes to models associated with data object changes.
- o　Developed Django CDN dispatch, multi-instance cloud configuration, multi-site support, autoscaling, security model.

　　Publishing server:
- o　Designed and implemented customer API for HTML/XML/JSON request/response interfaces in Django.
- o　Developed a publication preview and editing system with Django, Javascript, HTML and CSS.

　　Reader client:
- o　Developed system for managing HTML5 offline content, progress indicator, in Javascript.
- o　Developed history management for undo/redo in custom navigation environment in Javascript.

2011-2015

Software Consultant, *Applied Minds Inc.*, Glendale
　　Mobile web project:
- o　Apple iPad 2, iOS4, Objective-C, PhoneGap, JavaScript, HTML5.
- o　Developed prototype video teleconference, security, and video wall on iPad for military use.

　　Mobile camera project:
- o　Meego/Android, C/Java, kernel and application library modifications.
- o　Linux/Moblin, C/C++, kernel mode debugging and driver from scratch, V4L2 camera interface library.
- o　Developed camera driver and user interface for a Linux mobile device.

　　Stereoscopic project:
- o　Python/C++, Numpy, OpenCV.

2008-2011

- o Developed path finding, stereo calibration and reconstruction systems for autonomous vehicles.

Rendering project:
- o C++/Objective-C, OpenGL Shading Language (GLSL), Maya Mel, Mac OSX, OpenSceneGraph (OSG), Ogre 3D, Quartz Composer.
- o Developed terrain with OSG, pipeline to Maya for camera, lighting, material artistic work.
- o Developed real-time rendering application integrated OSG/Ogre3D and Quartz Composer.
- o Custom GLSL shader Oren-Nayar reflectance model.

Image processing project:
- o C/C++, OpenGL Shading Language (GLSL), Qt, Shake, Linux.
- o Developed several image processing algorithms in GLSL for image noise reduction and performance improvement.

Virtual reality project:
- o Java, Maya Mel, Project Wonderland.
- o Custom Maya pipeline to Wonderland VR toolkit.
- o Developed realistic projection-based layered visualization of real environment.

Hands-on development on miscellaneous projects:
- o C/C++, Python, Qt, Java, JavaScript, Mel, Animatics Basic, Windows, Mac OSX, Debian Linux.
- o Unity, Panda3d, Ogre, Sun Project Wonderland, Shake.
- o Implemented custom 3D user interface applications including component model for 3D user interface and navigation.
- o Embedded servo programming.
- o Maya modeling, texturing, animation.
- o Shake previsualization of real-time image processing pipeline.

Mobile Software Developer, *PureOn Inc.*, Burbank

Hands-on develop multiple system parts.
- o C/C++, MSVC and gcc.
- o Targets:

    Win32 desktop simulator
    Windows Mobile 6
    UIQ 3
    Qualcomm Brew 3
    Apple iPhone SDK 2

2007-2008

- o OpenGL ES to OpenGL desktop abstraction layer.
- o Full Khronos OpenKODE implementation.
- o OpenGL ES Node-based User Interface foundation.
- o Node applications ranging from phone desktop to dialer to contacts.

Technical Supervisor, *Walt Disney Feature Animation*, Burbank

2001-2007

Supervisor for pre-production stereoscopic tests on Meet The Robinsons.
- o Write bids, resource estimates and timeline, scheduling for project, negotiate with AP for resources, communication with executives.
- o Manage 20+ lighting/compositing crew and lighting supervisors on 30+ shots; interview artists, shot assignments, training, day-to-day management, conduct walkthroughs, identify problems and troubleshooting of shots.
- o Hands-on lighting/compositing on several shots.

Technical Supervisor for development, pre-production, production, post-production, and stereoscopic conversion on Chicken Little.
- o Initiate, coordinate, and conduct brainstorming and technology concept planning meetings to determine how to move the studio from traditional animation production to CG production.
- o Write analysis, block diagrams, requirements, roadmap for production.
- o Write and communicate to supervising team early case studies on artist issues
- o Create project planning document, resource estimates for 14 major technology initiatives, initial project summary schedule.

Subdivision surfaces	Fur
3D Paint	Facial
Skinning/Rigging	3D Layout Camera

Lighting Tools	Compositor
Lighting Data Management	Production Process Management
Data Management	Resource Management
Animation Tools	Playback Tools

- o Conduct meetings with users and developers, assign users to developers, follow-up with user and developer interaction, manage developer progress, work to-do, priorities, scheduling of user testing and user feedback for all projects (100+ developers, 15+ leads, 6 managers).
- o Lead for meetings on multiple projects, including brainstorming, requirements, scheduling, progress reports, completion reports, and follow-up requirements.
- o Gather user requirements, group, summarize, prioritize, assign, track, and communicate status of issues for multiple projects.
- o Report work left to do, resources available, schedule, assignments, issue summary, status and progress reports to production management for multiple projects.
- o Budget analysis, requirements, bids, bidding reviews, priorities, selection criteria, negotiating with production supervisors and technology managers for all projects.
- o Setup production support and troubleshooting plan; write requirements, resource needs, responsibilities; recruit, interview, hire, train, place, assign, manage day-to-day tasks, performance management, personnel reviews for assistant technical directors (10+), software technical directors (4+), and lead technical directors (2).
- o Write analysis, architecture, design, user and functional requirements for naming conventions, grouping and instancing conventions system. Implement test suite in C++.
- o Write analysis and architecture, roadmap, system diagram, user requirements and functional requirements, design and partial hands-on implementation of digital image output pipeline, including DCI image standards, color space standardization and conversion, Avid XML cut-list parsing, Shake scripts.
- o Stereoscopic conversion, data export and conversion, data validation, tracking, receiving, ingest and image conversion, final stereo image check, transfer and review to stereoscopic projection room, editorial timing of final stereo images, transfer and color conversion for digital intermediate, redo, retake, pick-up, and fix frames, status reporting scripts and web pages, and stereoscopic project management updates.
- o Hands-on development:

  > 50+ Perl scripts for retrieving MSSQL database information and printing results, utility scripts, pipeline scripts, meta-scripts, HTML page generation, etc.
  > 100+ Python scripts for database access, user interfaces, pipeline automation, image manipulation, image compositing, render management, utilities, HTML generation, SOAP queries, etc.
  > 20+ C-shell scripts for simple utility tasks.
  > A few Visual Basic scripts for SQL Studio report generation nodes.
  > 100+ HTML pages, hand-coded.
  > 100+ Maya MEL scripts for model check/fix, skinning, fur, paint pipeline, lighting utilities, lighting automation, lighting pipeline, general utilities, etc.
  > A few C++ Maya plugins for camera, fur, image manipulation, skinning, dynamics, etc.
  > A few C/C++ applications for image manipulation, etc.
  > A few Shake scripts and C/C++ custom Shake nodes.
  > A few Javascript HTML pages for nice user interfaces through web browser.
  > SQL Business Intelligence reports.

Lead Software Technical Director, *Walt Disney Feature Animation*, Burbank   2000-2001

Hands-on development:

- o 20+ Perl scripts for general utility, pipeline scripts, etc.
- o 100+ Maya MEL scripts for layout automation, layout user interfaces, data import/export/convert, image manipulation, camera projections, layers, projection constraints, rendering exporter, render management user interface, animation import/export, crowd setup, crowd user interface, crowd render pipeline and export, inkline render user interface setup, inkline render export.
- o A few C++ Maya plugins for camera, render, matrix, crowd, etc.
- o A few C-shell scripts for simple utility tasks, render utilities, etc.

Founder, *OnChannel Inc. / Coollogic Inc.*, Burbank/Dallas   1999-2000

Startup in embedded linux operating systems for set-top boxes. Raised seed funding, recruited team for development, business plan, market research, legal and financial issues. Press release planning, writing, and review. Negotiated asset purchase with Coollogic in August 1999. Completed asset purchase for cash and stock

in November 1999 and transitioned ON Channel team and technology to Coollogic, less than a year after inception.

Asst Software Technical Director, *Walt Disney Feature Animation*, Burbank   *1997-1999*

Hands-on development:

- o   20+ Maya MEL scripts for animation import/export, animation playback, animation renders, lighting setup, lighting transfer import/export, light manipulation, light constraints, fur setup, fur render, fur effects user interface, batch interface.
- o   20+ C++ Maya plugins for skinning, fur, render, effects, crowds, etc.
- o   20+ C/C++ applications for skinning, dynamics, effects, lighting, image planning, etc.