GIACOMO BERGAMO

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EDUCATION

Brown University – GPA: 3.9/4.0, graduated *magna cum laude* (2002)

- Economics, B.A.
- Computer Graphics and Film, B.A. with Honors *(a combination of computer science and film studies)*
- Honors: Phi Beta Kappa, Delta Phi Alpha, Omicron Delta Epsilon, *Wall Street Journal* Prize

Fine and Production Art Education

The Art League School / McLean Project for the Arts (2010 - Present)

- Professional fine-art training in anatomical drawing, figure sculpture, and oil

The Digital Animation and Visual Effects (DAVE) School at Universal Studios (2010)

- Professional training in 3D modeling and animation and visual effects

New York University Tisch School of the Arts (2000)

- *Sight and Sound: Film* intensive 16mm filmmaking course

RELEVANT SPECIAL SKILLS

Software Engineering

- UI conceptualization and programming for websites, games, simulations, and mobile apps
- Concept design of interaction between mobile devices and physical spaces
- Programming in J2ME, Java, Objective C, C/C++, UnrealScript, GLSL, PHP, SQL, HTML, CSS, JavaScript, Visual Basic, SIMSCRIPT II.5, Perl, Python, etc. in OS X, Windows XP, and Sun Solaris environments (recently using MS Visual Studio 2003-2012, Xcode, Eclipse, and Gemalto IDEs)
- Full-cycle software and simulation engineering from high-level program design to delivery for clients (including the Office of Naval Research and the U.S. Army's Center for Army Analysis)

Modeling and Animation

- 3D hard surface and subdivision modeling, lighting, and rendering in LightWave, 3DS Max, etc.
- Creation of procedural textures and photorealistic matched texture sets with LightWave, 3DS Max, Photoshop, ZBrush, etc.
- Sculpting, painting, and retopologizing of characters and hard-surface objects in ZBrush
- FK/IK rigging, hand-keyed animation, motion capture cleanup and blending, and lipsynching using LightWave, MotionBuilder, and TAFA
- Animation of fractured objects and particle-based systems for dust, exhaust, and other effects

VFX Compositing

- Keying, color correction, rotoscoping, and 2D/3D tracking and stabilization in Fusion, After Effects, Boujou, and SynthEyes
- Camera mapping using SynthEyes and Cinema 4D
- 2½-D digital matte painting in Photoshop
- Creation of fake clouds, water, bird flocks, shadows, reflections, smoke, explosions, heat exhaust, invisible cloaks, electricity, interactive lighting, etc. in Fusion, After Effects, LightWave, and Photoshop

SOFTWARE ENGINEERING PROJECTS

Commercial:

- *Inky* (Windows Classic, Windows 8, OSX, iOS, Android)
- *FitClick* Mobile for J2ME-enabled phones, iPhone port
- *Flipside* prototype for iPhone and iPad
- *Universal Garage* concept for smart phones with QR code and Bump technologies
- *Uxhibit* concept for web
- *Giramundo* P2P lending concept for web

- *Photo Mission* “social tapestries” concept for smart phones and web
- *Aspects* search optimization concept for web

Military/Counterterrorism:

- Assistant Secretary of the Navy (RD&A) iPad-based Decision Support Center storyboards and animatic
- ONR Code 30 Autonomous Vehicle Simulation Environment for Machine Learning
- Geolocation Applet
    - Deploys silently via SMS or IP connection to any GSM mobile phone
    - Understands several commands to silently return phone’s location one time or at specified intervals, activate geofencing, etc.
- COSAGE (Combat Sample Generator)-C4ISR, responsible for modeling:
    - Movement of the units and the distribution/posture of the vehicles inside them
    - Platform (e.g., UAV) movements
    - Sensor footprint projections
    - Probabilities of target detections and identification (given terrain, visibility, type of sensor, etc.)
    - Fusion of the information coming from different sensors into distinct “tracks”
    - Collection management plan for optimally retasking sensor platforms
- Seabasing Logistics Model
- JICM (Joint Integrated Combat Model) Chemical and Biological Weapons Module

WORK EXPERIENCE

Arcode Corporation **April 2012 – Present**
Mobile Lead

- Creating concept designs for next-generation email features to change how we visualize, organize, and search our messages as well as how we act on email data in the context of real-world locations and events
- Debugging core email logic for such functionality as automatic account discovery
- Designed and programmed iOS prototypes combining Python back-end logic with both native and web-based (via PhoneGap) user interfaces (using a combination of Python, Objective-C, C++, and JavaScript)
- Added logging, notifications, password encryption/auto-login, window controls and icon animations to email client on both Windows and OSX operating systems by using Chromium Embedded Framework to interface between system-specific C++ code and cross-platform JavaScript UI code
- Designed and programmed Windows Metro companion app and Live Tile using C++/XAML that shows recent emails to Windows 8 users by communicating with Win32 email client
- Designed and programmed system in cross-platform C++ and JavaScript for scraping additional information pertinent to users' emails from the web
- Designed 3D model of character that embodies app personality

Personal Projects **December 2011 – Present**

- Creating mobile 3D game engine from scratch using OpenGL with C++, Objective-C, GLSL and Python to power both games and toy construction apps
- Projects include:
    - Models created using LightWave, Blender, ZBrush, and Photoshop
    - Model exporter in Python, importer in C++/Objective-C
    - GLSL shaders allowing for ambient, diffuse, and specular lighting, with or without texture maps, and animated, realistic water done by combining normal maps
    - Collision engine that allows for 3D-3D and 3D-2D interactions
    - Animated 2D sprites in the 3D world
    - Multitouch controls for interacting with camera and objects
    - Projectile engine

Celerity Innovation Center **August 2011 – December 2011**
Concept Design Lead

- Invented and created concept designs for new product ideas in social networking, mobile commerce, and search optimization
- Created mockups of product UIs and of mobile products being used in the physical world
- Performed market analyses and created business cases for said ideas

- Designed and programmed prototypes on iOS and other platforms, including creating isometric 3D engine with anchored 2D UIView overlays (capable of displaying HTML) from scratch in OpenGL

Energetics Technology Center (ETC) — June 2010 – July 2011
Research Software Engineer / Concept Designer
Guest Researcher, University of Maryland Institute for Systems Research

- Designed and animated strategy-planning "war room" concept for the Assistant Secretary of the Navy (Research, Development, and Acquisition) with iPad-based user interface
- Co-authored 2011 IEEE IROS conference paper on real-time path planning through rough terrain
- Designed, programmed, tested, and documented simulation environments for auto-generation of autonomous behaviors for off-road unmanned ground vehicles (UGVs) for the Office of Naval Research (ONR), including:
    - Fast route planner implemented using stochastic dynamic programming (SDP) with QuadTree optimization based on obstacle distribution
    - Vision sensors for machine learning capable of depth perception, object identification, and friction and slope analyses
    - Integration with physics engines, including Unreal 2004, Unreal 3, and Vortex
    - Terrain based on real-world Digital Elevation Model (DEM) data
    - Numerous levels, obstacles, and vehicles modeled, rigged, and texture-mapped in LightWave
    - Integration of USARSim with modified sensor and communications packages
    - Multithreaded C++ controller software with integrated Xbox/XInput, 3D, and image processing libraries that allows for
        - Switching on the fly between waypoint navigation, artificial intelligence (AI), and human control, allowing AI to learn through programming by demonstration (PbD)
        - On-the-fly recording and playback of inputs to vehicle, also allowing for stored libraries of recorded movements to be used in PbD
        - Real-time manipulation of physical parameters, such as friction, through image maps
        - Real-tme customizable graphing of sensor data
        - Dummy script- or waypoint-driven vehicles to be loaded into the environment
- Collaborated with postdoctoral researchers and the Director of Maryland Robotics Center
- Wrote white paper proposals for NSF funding of low-cost VR training with 3D TVs and Wii controls

SolutionsDevelopers, Inc — May 2010 – June 2010
Contractor/Conceptual Artist

- Created prototype user interface/experience for multitouch-driven web application development tool

Red Earth VFX — March 2010 – May 2010
Visual Effects Artist

- Created 3D track of fight scene shots for JJ Abrams' *Undercovers* television pilot
- Rotoscoped, color corrected, and composited live-action footage, created fake shadows
- Modeled, textured, and rendered photorealistic 3D Parisian street scene for background plate
- Created photorealistic 3D dust matching actor's foot movements

Oceans' Edge, Inc — March 2009 – June 2009
Software Engineer

- Designed, programmed, tested, and documented silent SIM Toolkit geolocation applet for use by intelligence and law enforcement agencies using the Gemalto Developer Suite
- Analyzed phone hardware and debugged software using Agilent Technologies' network simulator and a pass-through device between SIM cards and mobile phones

Genesant Technologies, Inc — July 2007 – March 2009
Software Engineer

- Created navigation and SQL database systems for *FitClick* application for the iPhone
- Designed and programmed highly optimized *FitClick* J2ME mobile application that allows users to receive, view, modify, and "check in" diet meals and workouts (prescribed to meet their fitness goals)
    - Includes nutrition and progress graphs, workout instructions and animations, and grocery lists

- Allows for server-side generation of new features (including new displays, data, graphics, navigation trees, and data-entry end points) without changing application on handset
- Allows for ad-supported revenue model and tracking of ad views and general usage data
- Currently compatible with 71 mobile phones on AT&T, T-Mobile, and Sprint networks

Leadership Initiatives **December 2005 – July 2007**
Co-Founder / Director

- Directed all aspects of non-profit, from fundraising to on-the-ground projects in the Philippines and Nigeria, and oversaw several employees, dozens of students, and partnerships with three universities
- Efforts led to several corporate grants, a full-time Nigerian office, and successful student-run projects ranging from computer-training courses to English literacy education to a communal fish farm
- Designed and programmed websites with Flash, RSS feeds, streaming video, 3D animation, etc.

RAND Corporation **February 2003 – September 2005**
Research Assistant, Level II (Master's Level)

- Designed scenarios for counterterrorism research, including scenarios of tanker hijackings and active maritime and aerial patrols in Qatar (for the Qatari government) and scenarios of terrorist attacks on U.S. soil (for the U.S. Department of Homeland Security)
- Researched and co-authored report on next-generation "game-changing" advanced conventional weapons, which ones are likely to be used by terrorist groups, and countermeasures against their use
- Designed and programmed event-driven, object-oriented simulations of intelligence gathering on the battlefield for the U.S. Army (COSAGE-C4ISR) and of the logistics behind seabasing for the U.S. Navy
- Designed and programmed optimized biochemical weapon targeting patterns for the purposes of planning responses to worst-case scenarios of attacks on U.S. troops (for use with JICM Chemical and Biological Weapons (CB) database and the Vapor Liquid Solid (VLS)-TRACK application)
- Presented results to U.S. and foreign military clients while employing innovative techniques (such as creating 3D animations of scenarios) in order to clearly communicate ideas
- Collaborated with a healthcare company's CEO and vice presidents, directors of California's workers' compensation system, and senior RAND researchers in health economics
- Built scenarios for strategic business analysis, including possible future landscapes of the healthcare marketplace taking into account changes in insurance, medical technologies, legislation, payer size, prevalent diseases, and "black swans" (unlikely events)
- Performed statistical analyses of the appropriateness of payments for surgical procedures
- Pulled together many disparate sources of data to map the cost drivers in California's workers' compensation system and co-designed a system to measure its future performance
- Co-designed a scientifically sound "gold standard" performance measurement system for the disease management industry

PUBLICATIONS

- Bonomo, James, Giacomo Bergamo, et al., *Stealing the Sword: Limiting Terrorist Use of Advanced Conventional Weapons*, Santa Monica, CA: RAND, MG-510, 2007.
- Sullivan, Thomas J., Brian P. Reed, Giacomo Bergamo, and Michael Tseng, *JICM Chemical and Biological Weapons Module*, Santa Monica, CA: RAND, May 2004.
- Sullivan, Thomas J., Christopher Fitzmartin, and Giacomo Bergamo, *User's Manual: COSAGE with Improved Representation of C4ISR*, Santa Monica, CA: RAND, DDR-3047-A, September 2003.
- Wynn, Barbara O., Giacomo Bergamo, et al., *Medical Care Provided California's Injured Workers*, Santa Monica, CA: RAND, WR-394, September 2007.
- Mattke, Soeren, Giacomo Bergamo, et al., *Measuring and Reporting the Performance of Disease Management Programs*, Santa Monica, CA: RAND, WR-400, August 2006.