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INVENTIONS

Patents: Filed or in Process

- **IHC Color Space** – solely by AUTHOR 2006. Optimized for visual recognition; provides significant advantages for quantization, compression, and image/video search/collation.
- **MPID Mobile Positive Identification** – solely by AUTHOR 2008 for graphcomp. Lightweight crypto method that positively identifies mobile devices accessing web services. Does not require SSL libs, is unrestricted for export, and is hardened against spoofing, man-in-middle, and replay attacks.
- **CSD Chromatic Skin Detection** - SN 12/693,338 – solely by AUTHOR 2009 for Graphcomp. Optimized skin-tone filtering; reduces false positives and improves detection performance. Filed by Apple.
- **CBF Crude But Fast Noise Reduction** - SN 12/693,352 – solely by AUTHOR 2009 for Graphcomp. Fast despeckler tuned for haar-like detection. Filed by Apple.
- **3D Navigation of 2D Video Sequences** – solely by AUTHOR 2009 for Graphcomp. Provides real-time 3D navigation of cached video frames. Filed by Apple.
- **YUV Chroma Score** - SN 12/693,365 – solely by AUTHOR 2010 for Apple. Analogous to IHC, using UV coordinates for faster sorting and searches. Filed by Apple.
- **UV Skin Detection** - SN 12/693,368 – solely by AUTHOR 2010 for Apple. Analogous to CSD, using UV coordinates optimized for digital video. Filed by Apple.
- **Light Source Detection from Synthesized Objects** – solely by AUTHOR 2010 for Apple. Determining light source vectors based on surface normals.. Filed by Apple.
- **Hue-proximity Skin-tone Filtering** – solely by AUTHOR 2010 for Apple. Skin-tone filtering by measuring distance from a given hue. Filed by Apple.
- **Low Threshold Face Recognition** – solely by AUTHOR 2010 for Apple. Face recognition optimized for low-security use cases. Filed by Apple.
- **Correlation-less Stitching of Panoramic Images** - solely by AUTHOR 2010 for Apple. Stitching mobile images into a panoramic montage without correlation processing. Filed by Apple.

COPYRIGHTED SOFTWARE**Source code and visual presentation**

- **VIEWER** - Copyright **1973-1974** by AUTHOR. 3D perspective viewing system with hidden line removal and 3D vector fonts. Written in APL for the IBM 360 platform and Tektronix display systems.
- **PRMLIB** - Copyright **1982** by AUTHOR. Virtual graphics programming library. Written in FORTRAN for the PRIME/PRIMOS platform and Tektronix display systems.
- **gcDECLIB** - Copyright **1986** by AUTHOR. Virtual graphics and windowing programming library. Written in FORTRAN for the VAX/VMS platform and Tektronix display systems.
- **gcDOSLIB** - Copyright **1986-1990** by AUTHOR. Virtual graphics and windowing programming library. Written in MASM for the DOS platform, supporting MDA, CGA, EGA, VGA, SVGA and TARGA display adapters.
- **gcVIEW** - Copyright **1986** by AUTHOR. 3D perspective viewing system. Written in FORTRAN and gcDOSLIB.
- **gcVIS** - Copyright **1986** by AUTHOR. Automated 2D to 3D conversion package. Written in FORTRAN for the VAX/VMS platform.
- **gcTERRAIN** - Copyright **1986** by AUTHOR. Automated 2D contour to 3D terrain model conversion package written in FORTRAN for the VAX/VMS platform.
- **gcSLIDE** - Copyright **1987** by AUTHOR. Vector-based slide presentation system. Written in MASM and gcDOSLIB.
- **gcTGRPCX** and **gcTGRPIC** - Copyrights **1987** by AUTHOR. Optimized TGRAF to PCX/PIC conversion utilities. Written in MASM and gcDOSLIB.
- **gcSCANBIF** - Copyright **1988** by AUTHOR. Optical scanning to GDS CAD conversion package. Written in FORTRAN for the VAX/VMS platform.
- **gcSCAN** - Copyright **1988** by AUTHOR. DMA-based optical scanning, display and compression system. Written in MASM and gcDOSLIB.
- **gcCOGO** - Copyright **1989** by AUTHOR. HP to PC COGO file conversion package. Written in MASM and gcDOSLIB.
- **gcVIEW (MSW)** - Copyright **1990** by AUTHOR. 3D perspective viewing system. Written in C and MSW SDK.
- **MUTT(tm) Lite** - Copyright **1994-1995** by AUTHOR; Trade Mark held by AUTHOR. MUD client with hotkey, automated scripting and trigger support. Written in C and MSW SDK.
- **MUTT(tm) Live** - Copyright **1994-1995** by AUTHOR; Trade Mark held by AUTHOR. MUTT(tm) Lite, plus ANSI color, multi-media and animation support. Written in C++ and MSW SDK.
- **MUTTAPI(tm)** - Copyright **1994-1995** by AUTHOR; Trade Mark held by AUTHOR. A MUD DLL and SDK. Written in C++ and MSW SDK.

- **MUTT(tm) Elite** - Copyright **1994-1995** by AUTHOR; Trade Mark held by AUTHOR. MUTT(tm) Live, plus MUTTAPI(tm) support. Written in C++ and MSW SDK.
- **MUTT(tm) Esprit** - Copyright **1994-1995** by AUTHOR; Trade Mark held by AUTHOR. 3D MUD client. Written in C++ and MSW SDK.
- **gcMIME** - Copyright **1996** by AUTHOR. C API and C++ Class Libs for Multipart-MIME, Base64 encode/decode, UUENCODE and UUDECODE support.
- **gcMATX** - Copyright **1996** by AUTHOR. C API and C++ Class Libs for n-dimensional matrix arithmetic; includes determinant and matrix inversion.
- **Grafman Filters -- Render:MEDIA(tm)** - Copyright **1996** by AUTHOR; Trade Mark held by AUTHOR. Photoshop plugin filter module that provides 7 image-processing filters and their inverses.
- **RFC Indexer & Search Engine** - Copyright **1996-1997** by AUTHOR. A Web-enabled indexer and search engine optimized for RFC keyword searches.
- **Java Navigator** - Copyright **1997** by AUTHOR; Trade Mark held by AUTHOR. Java applet controls for navigation.
- **MUTT-Java** - Copyright **1997** by AUTHOR; Trade Mark held by AUTHOR. A Java MUD Client with interactive web support.
- **gcPoser** - Copyright **1997** by AUTHOR; Trade Mark held by AUTHOR. A Java/VRML/EAI Avatar poser.
- **VRML/FS** - Copyright **1997** by AUTHOR; Trade Mark held by AUTHOR. An ISAPI plugin that supports 3D/VRML navigation of file systems.
- **gcDBX** - Copyright **2001** by AUTHOR; Trade Mark held by AUTHOR. A collection of dbi-based, abstracted DB objects, deployed as perl module packages.
- **gcDBX** - Copyright **2001** by AUTHOR.
A collection of dbi-based, abstracted DB object classes and subclasses.
Written as **Perl** modules.
- **gcAuth** - Copyright **2003** by AUTHOR.
A object class that implements an optimized, secure, self-validating session key, with a specified lifespan between renewals. Requires no Cookies, nor a DB-hit after initial authentication.
Written as a **Perl** module.
- **gcSite** - Copyright **2003** by AUTHOR.
A base class that that creates a brandable web engine, which partitions code, templates and content - allowing engineers, designers and artists to work independently. Templates may be applied to multiple sites; multiple templates can be applied to a given site. Leverages CSS; requires no Cookies, or other client-side scripting.
Written as a **Perl** module.
- **gcData, gcMembers, gcCommunity, gcAdmin** - Copyright **2003** by AUTHOR.
Subclasses of gcSite, which provides (respectively) a) data read/right (via XML) and gcDBX, b) authentication and session management (via gcAuth), and access control, c) bulletin boards, messaging and d) tools for creating, eediting, managing content.
Written as **Perl** modules.

- **gcSoap** - Copyright 2003 by AUTHOR.
Abstracts local object/method calls with remote object/methods calls via SOAP.
Written as a **Perl** module.
- **wabLookup** - Copyright 2003 by AUTHOR.
Validates an email address from distributed Outlook Express WAB addressbooks on an intranet;
used for "whitelist" validation.
Written in **C++** as a DLL/COM object.
- **wabFetch** - Copyright 2003 by AUTHOR.
A distributed object that updates a central DB with email addresses from Outlook Express WAB
addressbooks from an entire intranet.
Written in **C++** as a DLL/COM object.
- **gcSpam** - Copyright 2003 by AUTHOR.
An object class that provides methods to effectively block spam through the use of blacklists,
whitelists and heuristic graylists.
Written as a **Perl** module.
- **gcString** - Copyright 2003 by AUTHOR.
A utility class that provides string tools; in particular, it provides a Diff method to determine the
delta between the content of two files.
Written as a **Perl** Module.
- **gcKeyword** - Copyright 2003 by AUTHOR.
An object class that digests a body of text and performs a statistical analysis on word frequency -
for use in indexing the content of text files.
Written as a **Perl** module.
- **gcRepo** - Copyright 2003 by AUTHOR.
A base class that provides methods to transfer deltas to/from a file repository.
Written as a **Perl** module; uses gcSoap.
- **gcSync**, **gcPush**, **gcPull** - Copyright 2003 by AUTHOR.
Respectively subclasses gcRepo to provide differential syncing, pushing and pulling of files,
to/from a repository.
Written as **Perl** Modules.
- **gcPlaylist** - Copyright 2004 by AUTHOR.
Subclasses gcRepo to generate a random list of files from a repository that fit within a specified
footprint, creates a differential list based on what already exists on the client, downloads the new
files and constructs a playlist for use with a media player.
Written as a **Perl** Module; works on a PocketPCs.
- **gcUUID** - Copyright 2004 by AUTHOR.
An object class that generates universally unique IDs. Reproduceable UUIDs can be generated
from user parameters; randomly unique UUIDs can be automatically generated from NIC, time
and random keys. Provides a GenGUID method which produces MS-compliant GUIDs.
Written as a **Perl** module.
- **gcTV** - Copyright 2004 by AUTHOR.
An object class that implements TiVo's Home Media Option Music & Photos, and Discovery
specifications. Implements image caching, rotation and scaling, and song streaming.
Written as a **Perl** module.

- **TiVoBeacon, TiVoServer** - Copyright **2004** by AUTHOR.
Respectively, a UDP discovery server for TiVo recorders, and a lightweight HTTP server that support queries and media serving for TiVo recorders.
Written in Perl, using **gcTV**.
- **gcSpooler, gcJob, gcMailer** - Copyright **2005** by AUTHOR.
Respectively provides a) a spooler base class, b) a job management subclass and c) an email-specific job class for sending email notification.
Written as **Perl** modules.
- **gcNewsLetter** - Copyright **2005** by AUTHOR.
Subclasses of gcAdmin(tm), which provides an interface for uploading/managing mail groups and to send email to groups of members.
Written as **Perl** modules using gcDBX(tm).
- **gc3D, gcMaterial, gcTransform, gcMesh, gcPrimitives, gcNodeFormat** - Copyright **2005** by AUTHOR.
Classes supporting the generation of 3D scene graphs and primitives. Written as **Perl** modules.
- **gcVRML, gcNVSG, gcDirectX** - Copyright **2005** by AUTHOR.
Subclasses of gc3D(tm), which provides output for (respectively) VRML, NVSG and DirectX
Written as **Perl** modules.
- **Video3D** - Copyright **2005** by AUTHOR.
GPU technology to alter camera angles in real-time, within post-process video.
Written DirectX/C++.
- **gcCaptcha** - Copyright **2007** by AUTHOR.
3D Captcha and authentication system.
Written as **Perl** modules.
- **OpenGL::Server** - Copyright **2007** by AUTHOR.
Scalable, distributed OpenGL server.
Written as a **Perl** module.
- **POGL OpenGL-Image** - Copyright **2007-2008** by AUTHOR.
Optimized imaging abstraction for OpenGL.
Written in C.
- **POGL OpenGL-Shader** - Copyright **2007-2008** by AUTHOR.
OpenGL shader abstraction.
Written in C.
- **gcStitcher** - Copyright **2008** by AUTHOR.
GPU-based panoramic stitcher used to harvest video scenegraphs.
Written in POGL.
- **Clydomania** – Copyright **2009** by AUTHOR.
GPU-based kaleidoscope iPhone app.
Written in Objective-C.
- **BugEyes** – Copyright **2009** by AUTHOR.
iPhone app that superimposes OpenGL eyes over faces from a camera photo, using haar-like detection of faces/feature.
Written in Objective-C.

- **Tiveras** – Copyright **2009** by AUTHOR.
TiVo Home Media server implemented on an iPhone that shares peer-to-peer photos.
Written in Objective-C.
- **Grafman's Media 1** – Copyright **2009** by AUTHOR.
A suite of imaging filters implemented on an iPhone app.
Written in Objective-C.
- **Stitcher** – Copyright **2009** by AUTHOR.
GPU-based panoramic stitcher implemented as an iPhone app.
Written in Objective-C.
- **gcHaar, gcObjectDetect, gcFaceDetect** – Copyright **2011** by AUTHOR.
GPU-enhanced 2D object detector for mobile devices, desktop and server-side applications. 2x-17x faster than OpenCV, depending on optimization features. Written in portable C, optimized for iOS (iPhone/iPad).

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- **Jameraude(tm)** - Copyright 1995-1996 and Trademarked by AUTHOR. Cartoon series; logo.
- **GIF*DOT(tm)** - Copyright 1995-1996 and Trademarked by AUTHOR. Image generator; logo.
- **MUTT's MUD List(tm)** - Copyright 1995-1996 and Trademarked by AUTHOR. Script resource; logo.
- **VR Snowman** - Copyright 1995-1996 by AUTHOR. CGI-based VRML generator.
- **Grafman's VR Gallery** - Copyright 1995-1996 by AUTHOR. VRML world.
- **Jameraude MUD Site** - Copyright 1996-1997 by AUTHOR. PennMUSH-based MUD world.
- **VR Bunny** - Copyright 1996-1997 by AUTHOR. CGI-based VRML generator.
- **VR Valentine** - Copyright 1996 by AUTHOR. CGI-based VRML generator.
- **VR Jameraude** - Copyright 1996-1997 by AUTHOR. CGI-based VRML Avatar generator.
- **VR Hero** - Copyright 1996 by AUTHOR. CGI-based VRML Avatar generator.
- **VR Dome** - Copyright 1996-1997 by AUTHOR. CGI-based VRML dome generator.
- **POGL: Portable OpenGL Developers Site** - Copyright 2007-2008 and Trademarked by AUTHOR. Sole author of website.
- **Voomsta: Video Effects Service** – Copyright 2007-2009 and Trademarked by AUTHOR.
- **Unalogo: Image/Logo Registration Service** – Copyright 2007-2009 and Trademarked by AUTHOR.
- **Vizcat: Scalable GPU Service** – Copyright 2008-2009 and Trademarked by AUTHOR.
- **Clydomania: iPhone App Site** – Copyright 2009 and Trademarked by AUTHOR.
- **Tiveras: iPhone App Site** – Copyright 2009 and Trademarked by AUTHOR.
- **South Bay Fusion: Blues Dance Community** – Copyright 2011 and Trademarked by AUTHOR.

OPEN SOURCE Personal Contributions

- **FFMPEG Logo vhook - 2006** - conceived/implemented in C by AUTHOR; contributed by Fabrik Inc. Video composting plugin.
- **CPAN OpenGL module – 2007** - upgraded to support over 50 OpenGL extensions in C by AUTHOR; contributed by AUTHOR. 3D/GPU Rendering Interface.
- **PerlMagick - 2007-** conceived/implemented in C by AUTHOR; contributed by AUTHOR. Added new APIs for optimized access to image buffers.
- **CPAN OpenGL::Image module - 2007** - upgraded to support over 50 OpenGL extensions in C by AUTHOR; contributed by AUTHOR. 3D/GPU Rendering Interface.
- **CPAN OpenGL::Shader module – 2007** - conceived/implemented in Perl by AUTHOR; contributed by AUTHOR. Abstracted interface for OpenGL shading languages such as ARB (assembly), Cg and GLSL.
- **CPAN OpenGL::Array Extensions – 2008** - conceived/implemented in C by AUTHOR; contributed by AUTHOR. GPU-optimized interface for common image processing effects (affine transforms, scaling, blur, etc).

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- **GDS CAD System Managers Manual** - Copyright 1986 by AUTHOR. CAD system managers manual.
- **Beginning GDS CAD Users Manual** - Copyright 1986 by AUTHOR. CAD users manual.
- **Advanced GDS CAD Users Manual** - Copyright 1986 by AUTHOR. CAD users manual.
- **GDS Executive Seminar** - Copyright 1986 by AUTHOR. Seminar booklet.
- **Automated Optical Scanning and Vectorization** - Copyright 1987 by AUTHOR. Seminar booklet.
- **MUTTER(tm)** - Copyright 1994 by AUTHOR. A MUD-based scripting language.
- **MUTTAPI(tm)** - Copyright 1994 by AUTHOR. A MUD-based development specification.
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