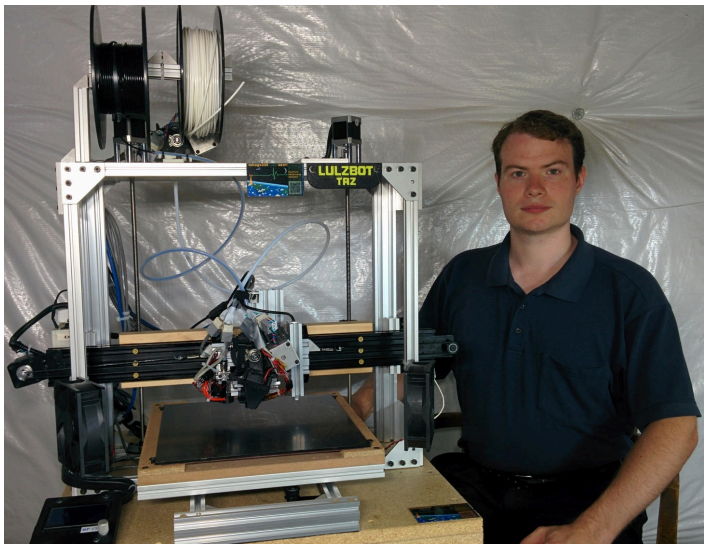
Recruiting

Matthew "mirage335" Hines

Maximum performance solutions.

Instructor in Technology Fundamentals (problemSolversGuide). Hardware, software, wetware designer. Interoperability specialist. Deploying a self-expanding VR environment throughout uninhabited space.



Communication

IRC WebChat: https://kiwiirc.com/nextclient/irc.libera.chat/##mirage335
Discord: https://discord.gg/Tm9Am8Yt
Patreon: https://www.patreon.com/mirage335
Sponsor GitHub: https://github.com/sponsors/mirage335
YouTube: https://www.youtube.com/channel/UC-hYbYGjhQdoF18U5VRUH9g
GitHub: https://github.com/mirage335
Email: spamfreemirage335 ' a T' gmail 'dot ' com
Phone: 1-301-660-6414

Typically available between 10:00-22:00 EDT and often beyond.

Please *do* text, leave voicemail, call multiple times, contact through multiple channels (eg. both IRC and Discord), repeatedly send multiple emails, etc. Due to persistent automation spam everywhere, such proof of cognition is helpful. For everyone already regularly contacting me, bringing my attention to any new persons or opportunities, is always very much appreciated also.

If communications are somehow saturated, or many opportunities arise, priority will go to people who can help make progress on the 'roadmap and timeline' under the 'universalTechnologySpecificationTextbook' ('uTST') .

More information (eg. unpublished email addresses) available on request.

Diversity, Equity, Inclusiveness (DEI)

Author 'mirage335' supports any reasonable path, valuing that many other persons have reasonable ideas, often adding new abilities and imagination.

For diversity, bring an apparently unique emphasis on possibilities, pragmatism, and brevity, so more is accessible for more people everywhere to pursue their own unique interests.
For equity, continue to unequivocally oppose and reverse any bias wherever credible evidence is found, to support others who find, oppose, or reverse, bias, so people can obtain the means and opportunities to pursue ideas that help everyone.
For inclusiveness, press for the realization that people with different interests and backgrounds are actually uniquely valuable and can in fact coexist in the same world.

Sometimes I, 'mirage335', have had the disappointment of witnessing and hearing of seriously intentional biased derogatory remarks, explicitly stated unwelcome harassment, imposition of limits, insinuation that non-conflicting private inclinations are public conflicts of interest. An individual's potential, contributions, and experience of life, is wholly distinct from any other attribute, group, behavior. Any bias otherwise only causes harm, is irrational as such, and discourages productive individuals who will notice.

Discovering such discouragement is difficult enough, tolerating such discouragement has no rational excuse.

Lawful PvP. Straggler criminal CMDRs from Eravate harassing newer players elsewhere in Elite Dangerous were hunted down after Eravate had cleared and Eravate Defense Network (EDN) ships had mostly withdrawn. Much thanks to 'Arguendo' for his 'IRL' air battle management skills coordinating EDN.
Here, I 'm335' with three other friendly CMDRs, in an Imperial Courier outfitted for speed, interdiction, shield cell cancellation (ie. mosquito wing), continued the hunt to another well justified PvP kill.

Direction

Helpful individuals or organizations are invited to participate.

Winners at the game of life bring the fullest diversity and quality to more players.

A transition from no wealth (ie. biological competence, what animals are born with), through wealth living on us (ie. creating technological tools), to us living on and once again independent of wealth (ie. technological competence, everyone born with the benefits of 'self-driving AI').

Eventually, while we still can before this universe ends in chaos, we must mostly fill that universe with unfettered opportunity. Eventually, we must be allowed uninterrupted, immersive, unlobotomized lives of our choosing with no limits whatsoever on our own forms, associations, experiences, cravings, desires, virtual reality, or neural interfaces.

My goal was and will long remain the widest possible empowerment - the expedient transition from no wealth, through living on wealth, to the unlimited wealth of self-driving AI for all to experience whatever life however they may wish.

Strengths

*) Robust containment of complete hardware and software design toolchains with interprocess-communication within single filesystem directories.
*) Compatibility layer for applications, legacy multiplatform (ie. MSW), cloud, virtualization, and LiveCD/LiveUSB.

*) Interoperable libraries for use within hardware and software design toolchains.
*) Compatible interfaces for hardware and software designs.

*) Strategic planning, technical point-of-diminishing-returns due diligence.
*) Extensively self-taught, accustomed to efficiently exploring uncharted territory.

Official Titles

Nation Of Makers (NOM) - Participant

Aug2016 - Present
https://www.nationofmakers.us/
https://makezine.com/2016/08/31/makerspace-organizers-convene-at-the-white-house/

Represented both Makersmiths (as member) and HacDC (as BoD) at the "Nation of Makers" gathering, and remain in contact with the people at that gathering.

HacDC - Former Director at Large, Former Vice President and Director of IT, Admin Team, Contributing Member

May2012 - May2021
http://www.hacdc.org/

Former Official contact for SUPPLIES and EXPANSION funds.
Network infrastructure for St.Stephens Church and tenants. Shell/VPS servers for HacDC members.
Providing an enduring historical perspective as one of the most longstanding members.
Multiple projects, presentations, prominently biosignal amplifier and OpticalTableRobot R&D.
Radio antenna development, testing, installation.
CNC mill, 3D printer, laser cutter, electronics test equipment deployment, operation, maintenance.
Represented both Makersmiths and HacDC at the "Nation of Makers" gathering.

Please support your local hackerspace!

Creative 3D Technologies - Senior Hardware Designer

Aug2022 - Present
https://creative3dtechnologies.com/
Helping a great company improve on their product (awesome new 3D printers). Emphasis on both optimizing for customer needs and bringing robust 3D printing to the world through design readiness for high volume production.

ZXYPro, 3D Connected Printing - Software Technologist (formerly Chief Technology Officer)

May2016 - Present
https://zxypro.com/
https://web.archive.org/web/20180817164203/http://www.3dconnectedprinting.com/
https://www.etsy.com/shop/3DConnectedPrinting

Interdisciplinary technical leadership, strategic planning.
CAD modeling, electronics design.
IT infrastructure management.
CNC machinery design, maintenance, improvement.

Imagnus Medical - Director of Engineering

Feb2013 - Present
https://www.linkedin.com/company/imagnus

Interdisciplinary technical leadership, strategic planning.
CAD modeling, electronics design.
IT infrastructure management.
Electrical, mechanical, and optical prototyping - fabrication and assembly.

Soaring Industries LLC - Owner, Sole Proprietor, CEO

Mar2016 - Present
soaringindustries.space
Self-owned technology business. Especially offers expertise in deploying own open-source technology, bringing emerging advantages in scalability and profitability, while field testing to reduce distractions from production and design.
PatchRap and CoreAutoSSH are notable successes of Soaring Industries LLC.

Soaring Distributions LLC - Manager

Apr2022 - Present
https://soaringdistributions.github.io/site_distLLC/
Distribution of some (may be mostly if not entirely software, mostly if not entirely FLOSS) products.

Skills

Over the years, some specific skills have been put into use, by no means a complete list.

	Hardware design, electronic, mechanical, and optical.
Mechanical Design
Optical Design
Electrical Design
Analog
Simulation

	Design automation. Using gEDA, FreeCAD A2Plus.
FreeCAD
gEDA
GravitySketch
MakeVRPro

	Fabrication and fabrication tools. Including 3D printing, CNC milling, laser cutting/engraving, photolitography.
Fabrication
Manufacturing
Photolithography
CNC Milling
3D Printing
Laser Cutting

	Graphical design/editing. Using GIMP, Xournal, Inkscape, and others.
Graphics
GIMP
Xournal
Inkscape

	Programming/Scripting. Bash, C, C++, Arduino, Python, PHP, and similar.
Scripting
Programming
Bash
C
C++
Arduino
Python
MySQL

	Unix/Linux portability, Legacy/MSW compatibility.
Debian
Gentoo
Linux
UNIX
LiveUSB
Virtualization

	Cryptography.
Cryptography

	Signal processing, statistical confidence testing, psychometrics.
Filter Design
Infinite Impulse Response
Statistics
Correlation
Confidence Testing
Psychometrics

	Documentation.
Technical Writing
MediaWiki
HTML

	Strategic leadership.
Instruction
Project Management
Git
GitLab
Research

Community

Have extensive experience leading community organizations, teaching freely available classes, and identifying issues in open-source code. Additionally, many other projects have been done collaboratively or in service of a larger community.

Assistant Teacher to Dan Barlow for CNC Mill Class

Mar2015
Class (at HacDC) began with Dan Barlow's outstanding theoretical introduction, which covered mounting hardware, cutting speeds, machine subsystems, and much more. Subsequently provided practical, hands-on individual instruction. Participants were independently able to attach appropriate mounting hardware, clamp workpieces, generate g-code using JSCut, and actually mill their designs.

CAD Modeling Class

May2013
Participants (at HacDC) were guided to create complex printable 3D models in under 20 minutes. Focus was on the fundamental geometric CAD workflow: sketching, constraining, extruding, face sketching, and assembling. After this tutorial, in-service part designs were demonstrated.

KVIrc Weak Encryption (Bug Report)

Jul2011
Tested and found KVIrc encryption to use only ECB mode, which outputs identical ciphertext for identical inputs and keys. Filed bug report, and contacted developer CtrlAltCa via IRC. Proper CBC mode encryption became available and documented for KVIrc as a result. Encrypting an image in ECB mode, as Wikipedia demonstrates, dramatically reveals this is an incorrect way to use otherwise secure ciphers.

http://en.wikipedia.org/wiki/Block_cipher_modes_of_operation
https://svn.kvirc.de/kvirc/ticket/1169
http://en.wikipedia.org/wiki/File:Tux_ecb.jpg

Linux Kernel Tracer Bug (Software Testing)

Apr2012
Reported and assisted diagnosis for a Linux kernel bug affecting kernel latency (ie. desktop interactivity). Bug fix was subsequently committed to mainline Linux kernel.
See commit db4c75cbebd7e5910cd3bcb6790272fcc3042857 at http://www.kernel.org/pub/linux/kernel/v3.x/ChangeLog-3.3.5.

Web2Project (Feature and Bugfix)

Mar2015
Added URL-based autofill functionality.
	https://github.com/web2project/web2project/pull/284

Corrected Calendar URL feed link generator logic. Commit merged into mainline.
	https://github.com/web2project/web2project/pull/284

DAViCal (Bugfix)

Mar2015
Minor bugfix regarding BIND request (external subscription) support. See dmfs.org for a description of this functionality.
	https://github.com/mirage335/davical/commit/60895b6aef8cfea6a2b2f29653d33f98c35e7bba
	http://dmfs.org/wiki/index.php?title=DAViCal

Tools

(notable)

ubiquitous_bash

At ~1MB of human written shell code, as of 2021, 'ubiquitous_bash' is expected to remain largest, most sophisticated, most robust, and most all purpose, shell script ever created.

Compressed header templates exist to provide hundreds of functions for small single-script projects. If you have a problem that needs a shell script, you need 'ubiquitous_bash'.

Software containment and interoperability, multiplatform structured programming middleware. Compatible with UNIX/Linux and Cygwin/MSW.

Build environments for arduino firmware (libraries, custom crystal-free boards, real-time debugger services), PCB photolithography (custom patched pcb2gcode binary), 3D printer fabrication (speed, cooling), etc, were fragile. Relying on Gentoo or Arch Linux to keep these dependencies usable while upgrading and installing other software would end up in a broken, unmaintainable state.

Hence, Ubiquitous Bash happened. Software would see the same directories even if absolute locations changed (ie. 'abstractfs'), have environment variables pointing to neighboring directories, dependencies would be installed automatically, tests would go far beyond usual CMake, and if necessary, filesystem parameters would automatically translate to run GUI programs through any virtualization backend (eg. ChRoot, QEMU, VirtualBox, Docker) which remained usable (always using the same raw disk image). Shared 3D space and multiple-input multiple-output pipes would be arranged as filesystem directories, automatically named pipes, triple buffers, etc, by the 'MetaEngine' module of the script. Later, ad-hoc Inter-Process Communication (IPC) would emulate the 'shared pair of wires' more typical of a hardware serial bus by both triple buffer and resetting pipes. All of this would also apply what few OS (both x64 and RasPi) customizations were still desired - copying these portable installations into bootable disk images and hooking developer functions into '.bashrc ' through ChRoot.

At least three years of shell scripting, >20k SLOC, and field testing, 'ubiquitous_bash' has acheived all objectives.

This document itself is self-modifying interleaved shell code from 'ubiquitous_bash' and markup.

https://github.com/mirage335/ubiquitous_bash

scriptedIllustrator

Documentation generation as self-modifying file of interleaved shell code from 'ubiquitous_bash' and markup (using block comments of each language). Multiple simultaneous self-modifying output formats (HTML, MediaWiki, Markdown) and PDF conversion.

This document itself is created by 'scriptedIllustrator'.

https://github.com/mirage335/scriptedIllustrator

BOM_designer

Hierarchical all-purpose Bill-of-Materials (aka. BOM) generator. Specifically intended to tally components from complex assemblies of other complex assemblies.

https://github.com/mirage335/BOM_designer

gEDA_designer

Generates, manufacturing (ie. gerber, centroid), distributor (eg. Mouser CSV), CAD (eg. SVG, DXF), model (eg. PDF, PNG), photomask (eg. PDF), files. Includes template and vector tests. May use similarly contained custom patched 'pcb2gcode' and/or 'pcb' as necessary for photomask, CNC drill/routing path, and autorouting compatibility.

https://github.com/mirage335/gEDA_designer

arduinoUbiquitous

Arduino build environments, projects, configuration, self-contained relative to 'ino' file instead of user directories.

Project and library file absolute locations always appear at same location (eg. '/dev/shm/...') set by an automatically generated 'project.afs' file (ie. 'ubiquitous_bash' 'abstractfs'). Working ARM hardware debugging services included with randomized network port connection to 'gdb', 'ddd', etc. Robust serial port and hardware port communication interaction and upload. Extensible by imported shell script neighboring 'ino' file (eg. to implement firmware-specific serial port identification). Certified well-tested versions noted in README file. Among other features.

https://github.com/mirage335/arduinoUbiquitous

PatchRap

Modular and standardized machine wiring, power distribution. One wire from 3D printer 'motherboard' per limit switch cable, instead of three.

Instant 'PatchPanel' combining a breadboards with a generic PCB. Adapts logic, sensors, actuators, and data networks to inexpensive, highly shielded long haul Ethernet/Telephone cable. Carefully provisioned for a vast diversity of applications, including vehicles, industrial automation, and datacenter monitoring. CNC and stepper motor driving use cases have been specifically documented. Innumerable configuration options are thoroughly supported. Printable color coded labels are available for maximum safety in high-power and high-reliability systems. Product of Soaring Industries LLC.

https://github.com/mirage335/PatchRap/blob/master/PatchRap.pdf

LiveUSB/LiveCD

Built by 'ubiquitous_bash'. Hibernation Snapshot, SaveState (VM features on any virtualization backend or physical computer hardware). Bootable disk images from same build also will be used as development computer (x64), end-user computer (x64), cloud services (x64) for thin-client, and embedded (RasPi) OS distribution.

TazIntermediate

Field test of tool usability, from electromechanical design, to the point of cabling diagramming and assembly rehearsal in VR. Only the VR part not yet 100% FLOSS, otherwise portable to any Linux (eg. VM) machine.

https://github.com/mirage335/TazIntermediate

flipKey

Multiplatform crypto shredding framework around veracrypt and cryptsetup. Ensures fragments of supposedly deleted or shielded plaintext are unreadable after any erasure, scrambling, or unobservability of the large (usually gigabytes) key file.

Notable *archival storage* capability real-time quad-redundant Magneto-Optical 640M discs and archival backup to BD-R. Reliability of Magneto-Optical 640M discs remains uniquely outstandingly useful today - thoroughly designed to ensure that data written is deeply embedded. Magneto-Optical discs are readable through ~2mm dust particles or defects, are designed not to split from elastic sealant layer, and have very strong magnetic coercivity when cooled after writing.

https://github.com/mirage335/flipKey

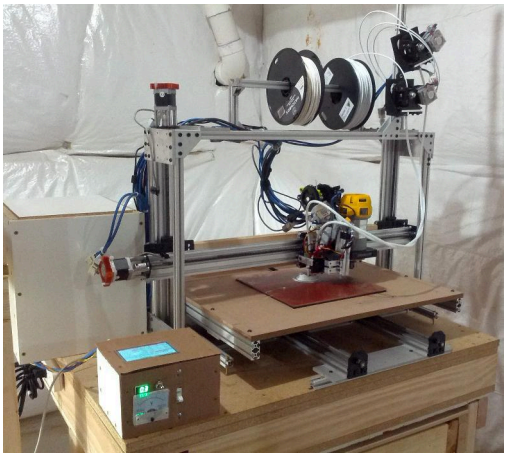
coreoracle

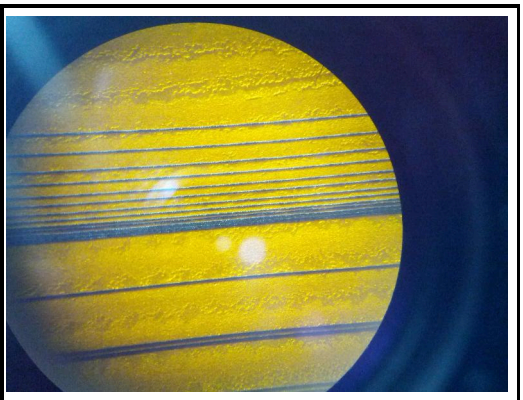
Pure ciphertext communications and secret-sharing volume decryption. May enable radio messaging statistically indistinguishable to distant listeners from noise, add a layer of quantum computing resistance to existing asymmetric protocols (eg. SSH, SSL), and add network services dependence to disk encryption. For developers, 'coreoracle' is also an example of using 'metaEngine' (an 'ubiquitous bash' feature).

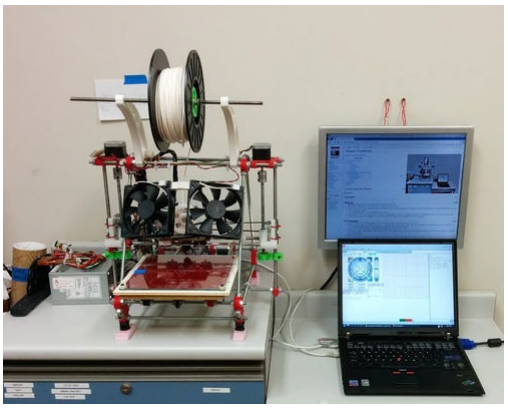
https://github.com/mirage335/coreoracle

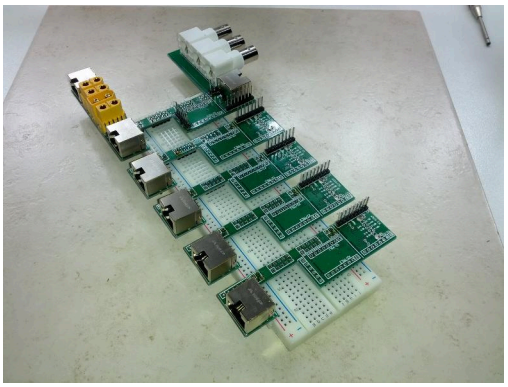
Projects

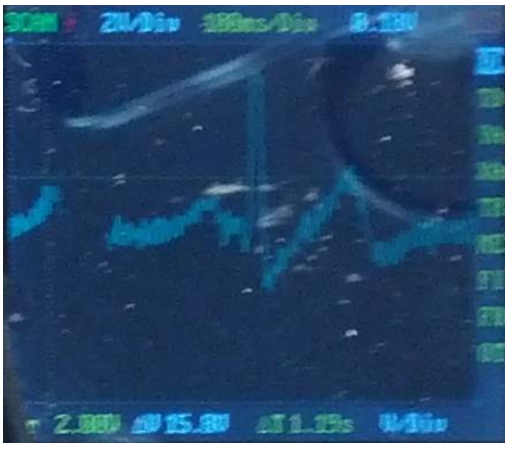
Assortment of side projects. Some continue as substantially important resources, others as expended resources having fulfilled a useful purpose and exemplified principles for future work.

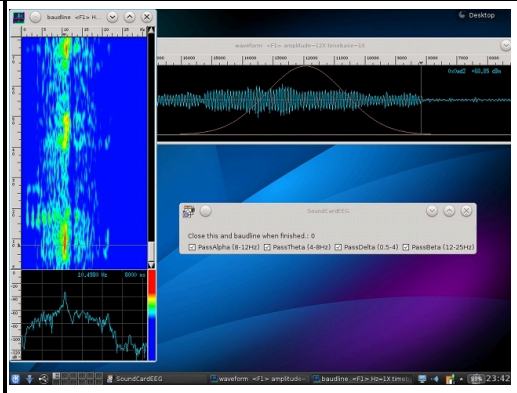


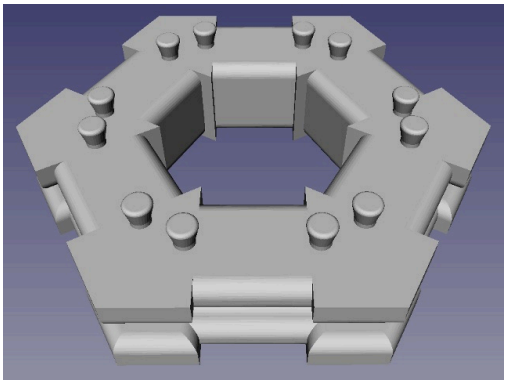


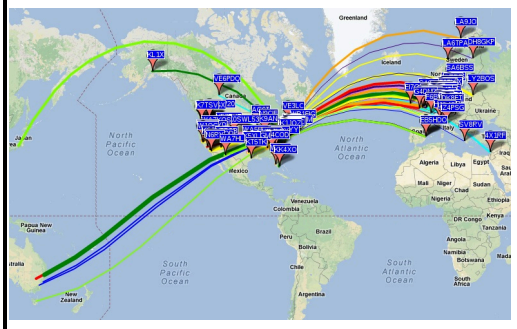











Greenland
North Pacific Ocean
North Atlantic Ocean
South Pacific Ocean
South Atlantic Ocean
Mexico
Venezuela
Colombia
Peru
Brazil
Bolivia
Chile
Argentina
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Ireland
Algeria
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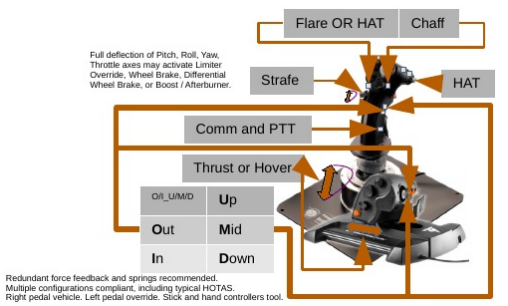
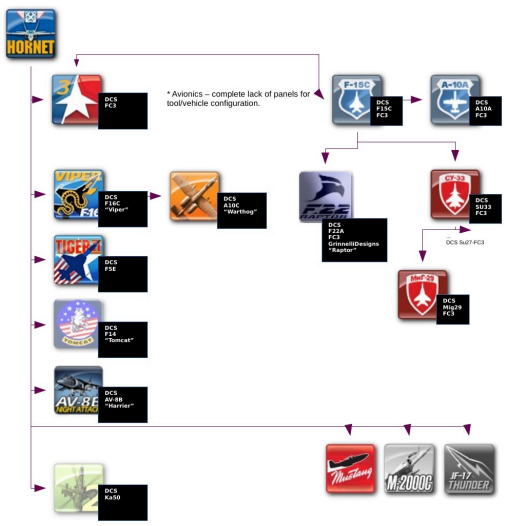
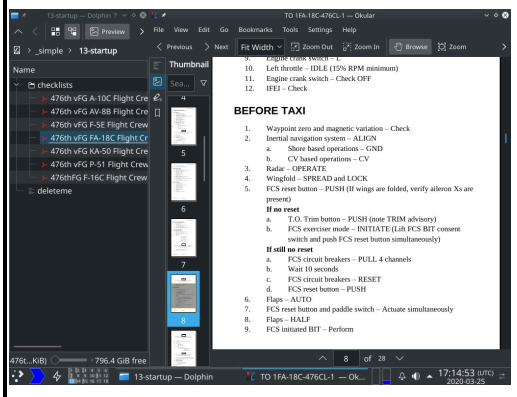
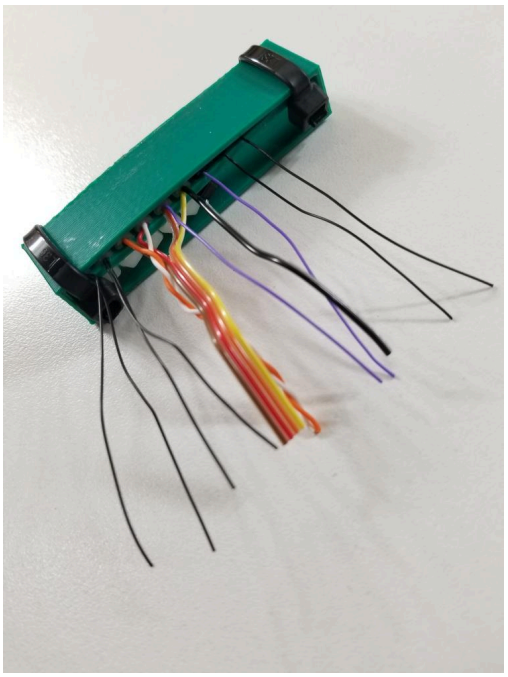
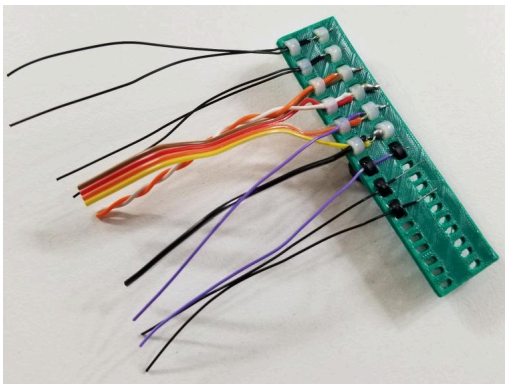
Botswana
Zambia
Papua New Guinea
New Zealand

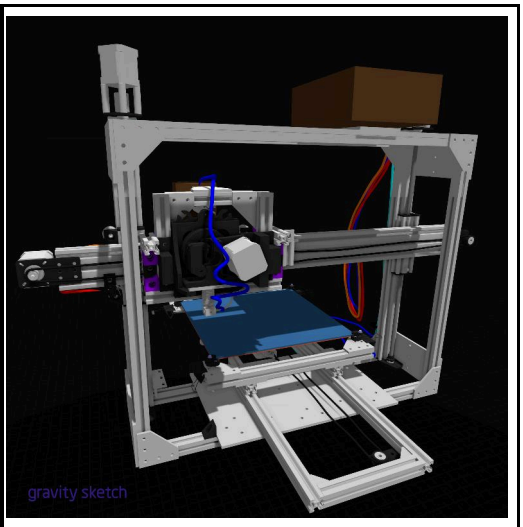

Flare OR HAT
Chaff
Full deflection of Pitch, Roll, Yaw, Throttle axes may activate Limiter Override, Wheel Brake, Differential Wheel Brake, or Boost / Afterburner.
Strafe
HAT
Comm and PTT
Thrust or Hover
O/I_U/M/D
Up
Out
Mid
In
Down
Redundant force feedback and springs recommended.
Multiple configurations compliant, including typical HOTAS.
Right pedal vehicle. Left pedal override. Stick and hand controllers tool.

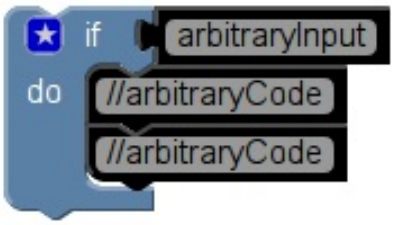

HORNET
* Avionics – complete lack of panels for tool/vehicle configuration.
DCS FC3
DCS F15C FC3
DCS A10A FC3
DCS F16C "Viper"
DCS A10C "Warthog"
DCS F22A FC3 GrinnellDesigns "Raptor"
DCS SU27-FC3
DCS F5E
DCS F14 "Tomcat"
DCS AV-8B "Harrier"
DCS Mig29 FC3
DCS Ka50
Mustang
M-2000C
F-17 THUNDER


TO 1FA-18C-476CL-1 — Okular
13-startup
checklists
476th vFG A-10C Flight Cre
476th vFG AV-8B Flight Cre
476th vFG F-5E Flight Crew
476th vFG FA-18C Flight Cr
476th vFG KA-50 Flight Cre
476th vFG P-51 Flight Crew
476thFG F-16C Flight Crew
deleteme
Thumbnail
10. Left throttle – IDLE (15% RPM minimum)
11. Engine crank switch – Check OFF
12. IFEI – Check
BEFORE TAXI
1. Waypoint zero and magnetic variation – Check
2. Inertial navigation system – ALIGN
a. Shore based operations – GND
b. CV based operations – CV
3. Radar – OPERATE
4. Wingfold – SPREAD and LOCK
5. FCS reset button – PUSH (If wings are folded, verify aileron Xs are present)
If no reset
a. T.O. Trim button – PUSH (note TRIM advisory)
b. FCS exercise mode – INITIATE (Lift FCS BIT consent switch and push FCS reset button simultaneously)
If still no reset
a. FCS circuit breakers – PULL 4 channels
b. Wait 10 seconds
c. FCS circuit breakers – RESET
d. FCS reset button – PUSH
6. Flaps – AUTO
7. FCS reset button and paddle switch – Actuate simultaneously
8. Flaps – HALF
9. FCS initiated BIT – Perform

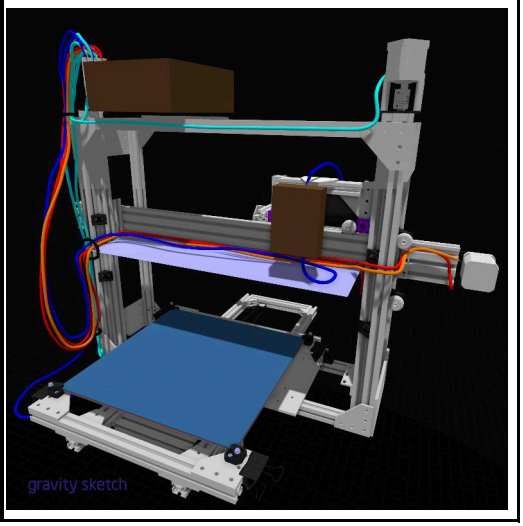









```
if (arbitraryInput) {
  //arbitraryCode
  //arbitraryCode
}
```



universalTechnologySpecificationTextbook

Feb2022-Present (part of 'mirage335_documents')

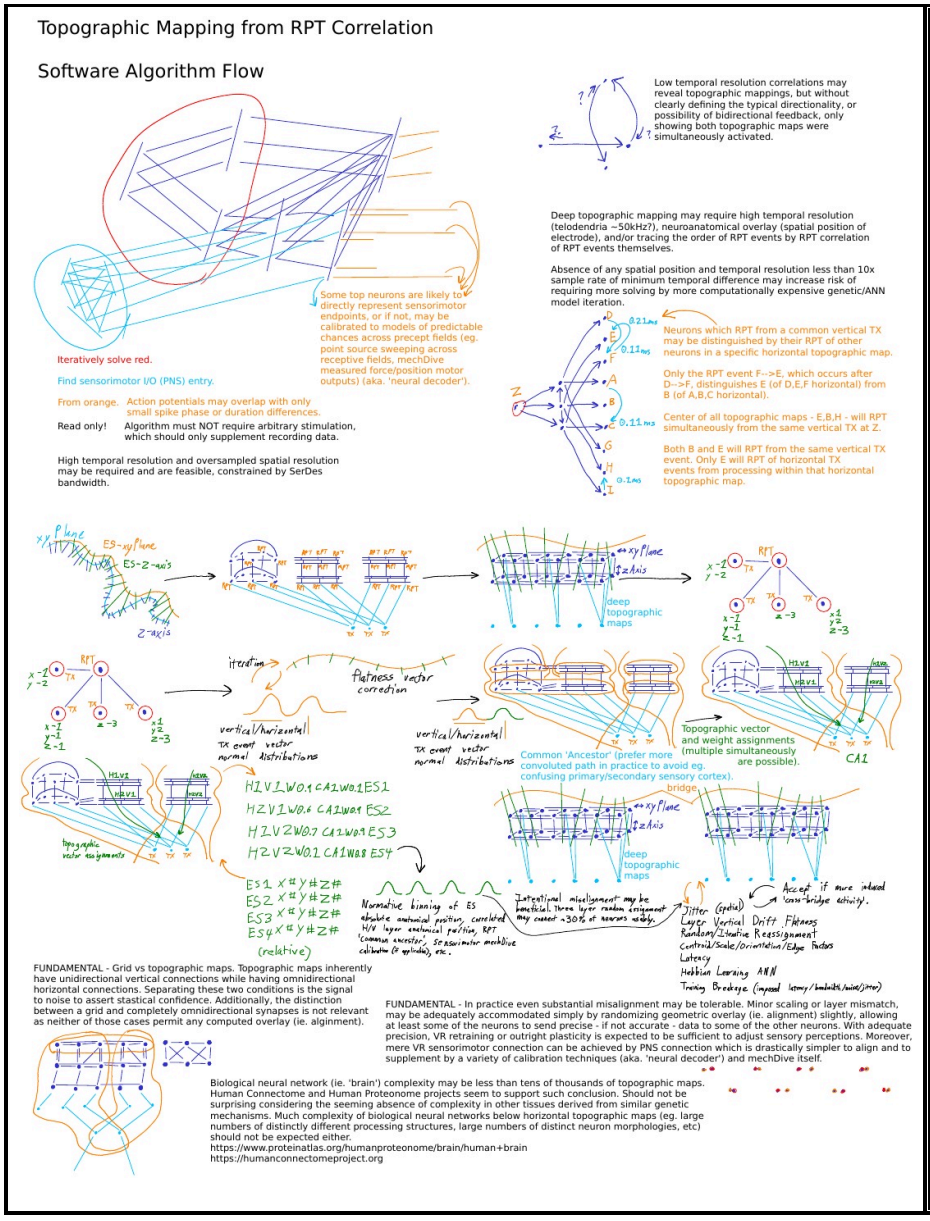
Self-Driving AI builds habitat throughout uninhabited galaxies and most of the Milky Way. Virtual Reality efficiently creates unlimited space for as many people as possible. Many people continue living on planetary surfaces.

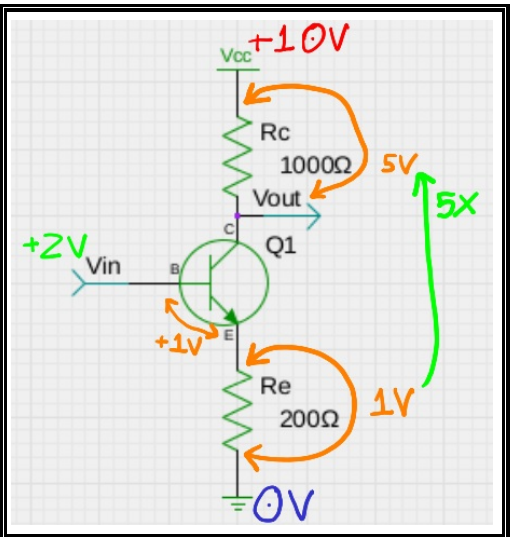
Details of how to build all of the technologies to make this possible are described here. Also, some discussion of what should be done and why. Something of a 'how-to' guide.

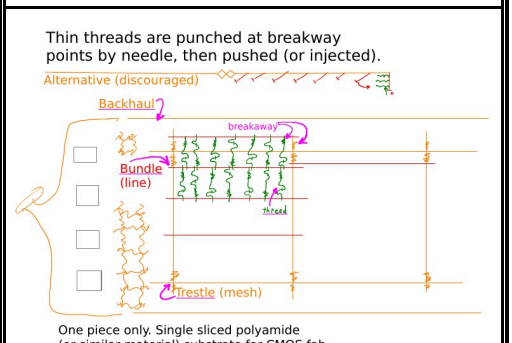
Notable headings.
*) problemSolversGuide
*) cognitionSplicer
*) neuralBits
*) mechDive
*) CARDinal
*) lithoDive
*) positionTrackers
*) sleeveDive
*) cryogenicComputer
*) flightDeck
*) modularAI

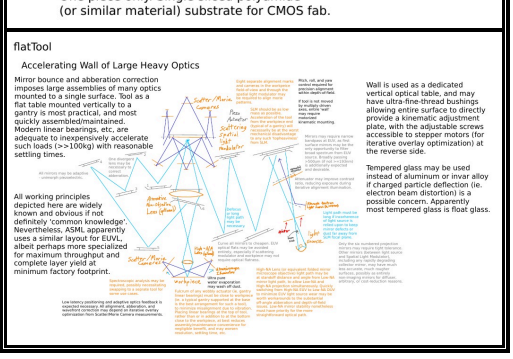
```
git clone --recursive git@github.com:mirage335/mirage335_documents.git
```

https://raw.githubusercontent.com/mirage335/mirage335_documents/main/mirage335_documents.pdf









Industrial Computerized Numerical Control (CNC) Platforms

Aug2015-Present
Designing, building, and operating a growing base of industrial Computerized Numerical Control (CNC) platforms.

TazMega and TazStiff are fully self-designed, built, and operated. TazUp simplifies the upgrade process for existing stock LulzBot Taz machines to a three-step process emphasizing the benefits of metal plates instead of plastic brackets.

Accessories applicable to virtually all CNC platforms have become available to the public through these projects. Most notably, RigidTable provides the strong base to resist stress that would deform less robust machines, and heavy tools simultaneously combining 3D printing extruders, milling spindles, and various lasers have been demonstrated.

TazStiff was demonstrated at the US Capitol during Public Knowledge 3D/DC 2016. TazMega and TazStiff were both demonstrated at USA Science & Engineering Festival (USASEF) 2016.

https://github.com/mirage335/Taz_Mega
https://github.com/mirage335/TazMega-SDCard
https://github.com/mirage335/TazMega-Softload
https://github.com/mirage335/TazStiff
https://github.com/mirage335/TazStiff/blob/master/TazUpHowTo.pdf
https://github.com/mirage335/TazIntermediate

https://github.com/mirage335/RigidTable
https://github.com/mirage335/TazStiff/blob/master/Table/Table.fcstd

https://www.facebook.com/publicknowledge/photos/a.10154183159401600.1073741833.81651801599/10154183164601600
https://youtu.be/0Vlh9-MIHSo?t=38

PrusaMendel

May2013 - Mar2015
Collaboratively, have upgraded rigidity, lifespan, and usability for HacDC's Prusa Mendel 3D Printer. Responsible for more than half the printer's parts, through upgrades over a three year period, as well as for the printer remaining operational. Maintenance has included documentation, extruder fabrication, CNC milling stronger parts, spool holder fabrication, complete print-surface re-engineering, and eliminating manual priming from the printing process. Special thanks to Julia Longtin for timely parts and debugging assistance, and mentorship.

Since then the platform has manufactured the models crucial to Julia Longtin's CCC31 presentation on lost-PLA aluminum casting by consumer microwave oven heating. Consequently, the overall effort has been directly responsible for HacDC freely acquiring an outstanding LulzBot Mini. High-maintenance requirements of the PrusaMendel continued to provide a highly educational robotics 'school' as well after that.

Personally, the PrusaMendel was a very important introduction to 3D printing and much needed experience solving mechanical issues and quantifying the need for machine rigidity.

https://www.youtube.com/watch?v=JsSndSXFl8M
https://wiki.hacdc.org/index.php/Category:PrusaMendel

http://www.hacdc.org/2015/03/10/hacdc-wins-lulzbot-mini-3d-printer-hackerspace-giveaway/

Biosignal Amplifier

Nov2012-Present
Animals (including humans) produce weak electrical signals, as hearts beat, muscles move, and neurons fire. Using all the best techniques and components, a uniquely low-noise high-dynamic-range biosignal amplifier has been achieved to pull out even the weakest biosignals for research purposes. Mirage335BiosignalAmp employs new research on low-noise amplifier chips and extensive measures to reject external noise such as feedback AC coupling, driven shields, and active probes. An ArduinoDAQ, 24bit ADC, is also onboard, paired with high-order digital IIR filters efficient enough to run in real-time on AVR (ie. Arduino) microcontrollers before handing off the raw audio format data through USB connection.

Complete schematics, PCBs, BOMs, documentation, repositories, and investor list, have been published.
Special thanks to Shawn Nock for creating oshpark conversion script, having inspired 'GEDAProduction' and later 'gEDA_designer', generating a variety of PCB related fabrication assets (eg. CAD models, gerber files, BOM, PDF photomasks). In all, advice, funding, assembly, and testing help came from 'Shawn Nock', 'Sharad Satsangi', 'Stuart Washington', 'The Real Plato', 'Logan Scheel'.

https://wiki.hacdc.org/index.php/Category:BiosignalAmplifier

TestCart

Jan2013-Dec2016
Built up HacDC's test equipment cart to handle almost any electronics design problem, through self-built hardware, salvaged components, recommended purchases, and efficient cart layout. Among other things, capabilities were broad enough to construct superheterodyne HF receivers in a few minutes just by connecting equipment with BNC cables. After serving many useful purposes for a long time, unfortunately was disassembled due to temporary disuse and pressing need for floor space. Until then, this was

most likely the most complete publicly available electronics test facility at or near the US East Coast.

https://wiki.hacdc.org/index.php/Category:TestCart

30MHz_LowPass

Oct2013-Present
Air-core toroid, extremely high performance DC-HF preselection filter for extremely high dynamic range upconverting superheterodyne radios. Functional, tested, and using robust 3D printed electrical components of own manufacture.

https://github.com/mirage335/30MhzLowPass

3D Printed Air-Core Toroid Inductors

Oct2013-Present
Air-core toroid inductors improve electromagnetic interference (EMI), unwanted magnetic coupling, and high-frequency performance. Counter-winding channel eliminates the 'one-turn-loop' effect, confining the magnetic field entirely within the toroid and attenuating coupling between stacked toroids to better than -20dB (100x). Whereas air-core stacked planar or solenoid conductors would have nearly 0dB (1x) coupling. Now, plastic formers printed for air-core toroids offer these benefits cheaply on demand.

https://www.thingiverse.com/thing:870592

HacDC HF Antenna

Aug2012-Apr2013
As a HacDC project, provided worldwide HF (shortwave) amateur radio communication, having served as the club's primary antenna for at least three years. This replaced an antenna remote amateur radio operator receivers confirmed as inoperable for transmission. Testing a variety of antennas in a rural open field demonstrated a 20m quarter-wave (5m height) vertical monopole antenna was most suitable. With an SGC-237 autotuner, all-band coverage from 1.8MHz to 29.7MHz has been available, meeting the requirements for automatic link establishment. Special thanks to Martin Rothfield for testing and arranging roof access.

http://en.wikipedia.org/wiki/Automatic_link_establishment
https://www.hacdc.org/2012/08/17/new-amateur-radio-antenna/

AudioToResistance

May2013-Jun2013
Collaboratively worked with Project Byzantium development team at HacDC to trigger Push-To-Talk radio inputs using only energy received from audio line-level signals. Enables high-speed data transmission across VHF/UHF amateur radio technology, requiring only low-cost 'handie talkies' as transceivers. Assistance provided included several schematic designs and CNC milled PCBs in one night.

http://project-byzantium.org/
https://github.com/HacDC/AudioToResistance/blob/master/Basic.sch.png

Web Services

Oct2014-Apr2016
Hosted at HacDC, using servers Shimmer, Starlight, and Nebula. Personally setup and shared with the community. After serving useful purposes, especially VPS hosting for HacDC members, unfortunately defunct due to eroding physical hosting space and ISP changes. Reuse, donation to another hackerspace, or salvage, are all possible, as the components remain relevant, valuable, and especially reliable (notably having been manufacturered near the end of server exemption from RoHS).

http://hacdc.org/
https://wiki.hacdc.org/index.php/Shimmer
https://wiki.hacdc.org/index.php/Starlight
https://wiki.hacdc.org/index.php/Nebula

Flight Sim Aug2018-Present

Proficient (at least when not out of practice) in DCS World with FA18C and other simulated aircraft including F16C, to the point of complete startup procedures, avionics use, night carrier landings, formation flying, approach plates, etc. Partly used to perfect the 'commonControlScheme' single-stick compatible HOTAS specification, and alternative voice commands, carefully provisioned for mapping of all controls to buttons and axes for a much wider variety of tools and vehicles .

BusinessCard

Nov2012-Present
Custom graphics. Only the satellite, antenna, clouds, stars, are clipart from OpenClipArt or Inkscape. All other work is an original design. Actual cards are color laser printed as seamless 12 card panels, then depanelized by HacDC's 40W CO2 laser cutter (and later Makersmiths's CO2 laser cutter).

Formal Qualifications

Self Taught, Aggressively

Amateur Radio Licensed, Extra Class, earned in one sitting. Callsign AB3PI.
	https://wireless2.fcc.gov/UlsApp/UlsSearch/license.jsp?licKey=3350807
	Issued Feb 2012
	No Expiration Date

CompTIA Linux+ Certified
	https://www.credly.com/badges/0169e322-dc3b-4972-92de-edb64c4136d9/public_url
	http://en.wikipedia.org/wiki/CompTIA#Linux.2B
	Issued Sep 2010
	No Expiration Date

Hurricane Electric IPv6 Certification
	https://ipv6.he.net/certification/create_badge.php?pass_name=m335foundation&badge=3
	Name: mirage335foundation
	Level: Sage
	Current Score: 1005
	Issued Feb 2017
	No Expiration Date

Black Belt, First Degree

UMUC
	GPA 4.0, Summa Cum Laude
	Bachelor's of Science (Psychology) Degree
	Computer Science Minor

POLICY

Copyleft

Default - Public Doman
Resources without an explicit license declaration are automatically in the public domain.

Small - Public Domain
Small projects and libraries will be explicitly given an all permissive license to maximize adoption (eg. 'scriptedIllustrator').

Large - GPLv3
Large projects will be given GPLv3, *NOT* GPLv2.

Specialized - AGPLv3
AGPLv3 license may be imposed until sufficiently reassuring contributing and actively community engaging behavior is seen, if there are specific unusual risks of open-source code becoming unusable.

*) History (eg. Arduino) of overcommercialization and portability/compatibility neglect causing especially delayed and painful interoperability effort (eg. 'arduinoUbiquitous' firmware library, gdb debugging, etc, containment).
*) Unusual likelihood of entire project maintained behind software-as-a-service (eg. 'scriptedIllustrator' tinyCompiler)
*) Already predominant absence of availability of any similar essential resource except behind software-as-a-service (eg. 'BOM_designer').
*) Possibility for quoting out of context (eg. 'universalTechnologySpecificationTextbook') .
*) Unusual incentive to neglectfully substitute multiplatform host virtualization compatibility for cloud (eg. 'universalTechnologySpecificationTextbook' due to 'scriptedIllustrator').
*) Expected abandonment of interoperability and portability/compatibility except through predominant 'app store' and 'thin client'.

Nevertheless author 'mirage335' respects the reservations of such organizations as 'Google' regarding the virality of AGPLv3, and is willing to make reasonable accommodations. Normally the AGPLv3 license is only narrowly applied to code with no plausible end user or network service function (eg. 'arduinoUbiquitous' firmware compiler, 'scriptedIllustrator' tinyCompiler bootstrapping, 'BOM_designer' extremely specialized for CAD assembly, 'universalTechnologySpecificationTextbook' for developers, mostly only for the author, and only a static document for non-developers).
https://opensource.google/docs/using/agpl-policy/

Specialized - Wiki
For compatibility with Wikipedia, in addition to any other (ie. public domain or AGPLv3 compatible) license, Wiki pages at any site may benefit from the Creative Commons Attribution Share Alike license.

DISCOURAGED - GPLv2
GPLv2 is questionable, as accidental violation of the GPLv2 can cause massive problems for large projects, and usual text for GPLv2 may not include provisions to allow relicensing by any 'later version'. Case in point: it would be "technically quite hard" (Linus Torvalds) to dual license the Linux kernel.
http://www.gnu.org/licenses/quick-guide-gplv3.html

Authentication

Authentication without encryption is reasonable in some situations by limiting transaction rates, by physical location/direction, and by revocation of multiple logins. By contrast, relying on encrypted logins by HTTPS/SSL, has a history of severe weaknesses, plaintext emissions, timing analysis, side-channel analysis, and official amateur radio incompatibility.

Plain HTTP may be used whenever possible. At all times (even as part of encrypted login web pages), some filetypes (particularly images) may remain unencrypted (eg. if served by CoralCDN).

RoHS

RoHS ban of leaded solder is of negligible benefit and substantial harm whereas a tax may have been more reasonable. Little change in environmental lead from bulk uses could reasonably be expected, and unintended consequences are severe.

*) Insufficient assurance third-party (especially small business) PCB assembly services have followed the many precautions to minimize tin whisker failures.
*) Non-availability of computer CPU/GPU/RAM/motherboard tolerant of long-term ambient cooling by liquid nitrogen, liquid helium, etc, due to tin pest.
*) Drastically worse risks during chip replacements by hot-air removal and reflow.
*) Drastically worse risk of damaging 3D printer control circuitry due to >1year backordered chip shortage.
*) Unnecessary disruption due to avoidable failure of older servers.
*) Possible loss of the dwindling supply of the most reliable data storage devices ever created - magneto-optical drives.
*) Data loss unpreventable due simultaneous tin whisker bridging failures including unintended simultaneous overwriting of multiple RAID arrays.

For the future, all industries must be wary of provoking such a ban instead of a more reasonable tax, as a consequence of any perceived irresponsibility on their part.

Copyright

AGPLv3
Unusual exception for specific complete binary files as described by license notice.
https://github.com/mirage335/mirage335_author

License Notice