§ Coranna Howard

A programmer and artist from the Seattle, Washington area who is skilled in technical writing, vocational teaching, data architecture & reverse-engineering, software repackaging, and the design & implementation of low-level APIs.

§ www

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§ professional work

¶ self-employed — Tacoma, WA, U.S.A.

» **2014–present** — personal, gigs

Started togo and Quanta, tackled gigs in a medley of fields, and consulted on healthy tech work culture.

¶ Austin Powder — Cleveland, OH, U.S.A.

» **2011–2014** — software repackaging

Architect of packaging methodology & repository of 675+ packages (approximately 211 products across 75 vendors) for a network of 850 Windows computers. Documented methodology & structure and taught the art of repackaging.

» **2009** — software deployment

Installed and configured Lotus Notes upgrades.

» **2009** — hardware deployment

Configured and shipped approximately 70 Wyse terminals to client's offices.

» **2008** — hardware deployment

Configured and deployed 65 computers with Windows XP. Built cross-platform software to track assignment & completion of each device and to allow project manager to securely share user info with the technician.

» **~2005–2008** — IT assistance

Numerous small jobs to keep the gears turning: utility software in various languages, software & hardware configuration & deployment, documentation, and user support.

§ skills

C, C++	make, Premake
C♯	Bash, CMD
Lua	Linux, POSIX
Python	Windows, WinAPI
Clang, GCC	Excel, GSheets
git	Blender, GIMP

§ volunteer work

¶ scientific research

» **'15–present** — HCI thesis on trans people *(identity withheld to prevent deanonymization)*

¶ Linux videogame QA

» **'12–'14** — Humble Inc., 17 games
» **'12** — Santa Ragione, Fotonica
» **'12** — Subsoap, Faerie Solitaire

§ background

» **'13–'14** — *Algorithms, Part II*
» **'13 × 2** — *Algorithms, Part I*
» **'11** — *Repackaging and Application Migration using AdminStudio 9.5*
» **post sec., CS** — autodidact
» **K-12** — autodidact / homeschool
» **English** — *C1-C2*, U.S.–U.K. hybrid
» **French** — *A1*, Standard/Metro.

§ hackathons

» **2017** — ParkPoints, a gamified park participation app (for *Parks and People United Through Technology* by Metro Parks Tacoma)

- Dev cöordination; do-all.
- Joint with Andrew Dickinson, Grace Bergman, Jasmine Scott, Krystaal McClain, and Robin Choi.

§ code

¶ personal

» togo — super-library for apps & games *(C++, Lua)*

- Data-oriented design, open types, open interfaces.
- Digestible alternative to the C++ Standard Library.
- Game engine (WIP) with pipeline tooling.
- Imaging and windowing.

» Quanta — adaptive tracking toolkit *(C++, Lua)*

- Expressive time and nutrition tracker, WIP Android companion.
- Universal description language (English read- & write-able).
- Extendable, rapid-iteration tooling and data analytics with Lua.
- Linux integration (CLI tools, data vessels).

» Pickle — static site generator *(C++, Lua)*

- Non-dogmatic; user controls structure.
- Lua-based template language and userspace.
- Bare-bones web server for rapid iteration.

» precore — Premake 4.4 extension *(Lua)*

- Modularity & reusability layer atop Premake.

» igen — interface generator for C++ *(Python, libclang)*

- Generates function declarations (preserving docs) from their implementations.

» include_sort — inclusion sorter for C & C++ *(Lua)*

- Sorts #include statements in user-defined order.

§ contributions

¶ major

» **'15** — spirv,† a SPIR-V binary {de|en}coder *(Go)*

- Implementation of the provisional specification.
- Contributed fixes upstream (Khronos).
- Co-architect alongside Jim Teeuwen.

» **'11** — mooege,†‡ a *Diablo 3* server emulator *(C♯)*

- Networking (Battle.net, game layer), game world, Linux support.
- Asset RE, packet RE, Protocol Buffer implementations, documentation.
- Designed prospective production-grade server architecture.
- Later: PR arbiter/project manager, working with many important contributors.
- Co-architect alongside Hüseyin Uslu.

» **'10** — Maximus,† a module manager *(BlitzMax)*

- Core architecture and command-line client.
- Joint project with Christiaan Kras, who maintained GUI client & web service.

† — Defunct.
‡ — Commit history.

¶ minor

» Pygments *(Python)*
» libc++ *(C++)*
» GLM *(C++)*
» gltext *(Go)*
» SPIR-V Specification (provisional)
» Golang Specification
» Elixir Getting Started tutorial

§ art

¶ videogame

» **2014** — Onomo, a slow, dark platformer concept *(Ludum Dare 30, Lua, LÖVE, 34.7h)*
» **2013** — Prisma, a color-based twitch puzzler *(Ludum Dare 26, Lua, LÖVE, 35.1h)*

¶ sound

» **2016** — sounds for contemplating the universe, a short aural journey to accompany thoughts of life beyond your star system *(SunVox, Fermi Paradox Jam)*

¶ visual

» **2014** — Kaleidograph *(stills)*, an interactive generative art program *(JavaScript, p5.js)*

§ familiarity

This section serves as a search-catch and as a summary of my experience.

See below for rank key.

¶ concepts & domains

- **API & system design** — extensive: very many API projects, strong attention to detail, strong architectural cohesion mindset
- **algorithms & data structures / abstract data types** — extensive: many uses of non-trivial structures & algorithms; task distribution, hashing, PRNGs, graphs, tries, hash tables, priority queues, stacks, radix sort, merge sort, quick sort, LZW, Huffman coding, RLE; basic complexity analysis; intermediate-level education, strong intuition
- **data storage** — proficient: very strong understanding of binary & text formats, proficient in non-trivial serialization
- **language, parsing, pattern matching** — extensive: a universal description language, a Quake-like, and a JSON-like; multiple uses of Lua as a DSL
- **reverse-engineering** — extensive: data & algorithms for a handful of games, several cryptographic breaks
- **game systems & design** — wide: several successful game jams, several small experiments, several game emulation projects; strong intuition
- **networking** — wide: several game server emulation projects, experiments
- **graphics** — narrow: 2D games & experiments; strong intuition, embarking on 3D
- **mathematics** — narrow: algebra, functional linear algebra, basic calculus, basic set theory, basic logic, extensive notation; strong intuition
- **cryptography & security** — narrow: daily PGP use, basic practical implementation – I won't store passwords unsalted, or use SHA1, or send your boss's (nor their boss's) plaintext credentials to IT
- **time tracking** — proficient: daily, very detailed (beyond work), personal software

¶ programming languages

Standard library familiarity is equivalent to language familiarity herein.

- **C++** *(03–11)* — proficient: very many projects over very many domains
- **Lua** *(5.0–5.2, LuaJIT)* — proficient: many projects over many domains
- **C** *(89–11)* — extensive
- **C♯** *(2.0–5.0, .NET, Mono)* — wide: large emulation project, several apps, professional
- **Python** *(2–3)* — wide: large Blender automation project, several utilities
- **Go** *(0.x–1.x)* — narrow: community projects, some language spec fixes
- **HTML** *(4–5)* — wide
- **CSS** *(2.1–3)* — narrow
- **JavaScript / ECMAScript** *(4–6)* — narrow: several websites, professional
- **Java** *(SE 6)* — wide: coursework, projects
- **TypeScript** — narrow: experiments
- **BlitzMax** — proficient: many projects, professional
- **Bash** — extensive: daily
- **Windows CMD** — extensive: professional
- **Assembly** *(Intel, x86)* — narrow
- **Erlang** — minimal
- **Elixir** — minimal
- **Scheme** — minimal
- **Lisp** — minimal

¶ toolkits

- **POSIX** — extensive
- **Windows API** (Win32/WinAPI) — narrow: professional
- **Android SDK** — narrow
- **OpenGL** *(2.1–3.3)* — wide: rendering pipelines, game emulation, extensive architectural knowledge
- **Vulkan** — narrow: specification fixes, SPIR-V tooling, some architectural knowledge
- **DirectX** — minimal
- **SDL** *(1.x–2.x)* — extensive
- **GLFW** *(2.x–3.x)* — extensive
- **LÖVE** — extensive
- **Stingray / bitsquid** — narrow: extensive architectural knowledge, no direct use
- **Quake-like engines** — minimal: modding & mapping for *Half-Life 2: Deathmatch* (Hammer) and early *Medal of Honor* games
- **GameBryo** — minimal: modding *The Elder Scrolls IV: Oblivion*
- **GameMaker** — narrow: dabbling, professional
- **Unity, Unreal, XNA / FNA / MonoGame** — minimal: basic architectural knowledge through QA & debugging, no direct use
- **LLVM** — narrow: tooling
- **p5.js** — narrow: generative art
- **node.js** — narrow
- **React** — minimal

¶ software

- **Linux** *(Ubuntu, Debian)* — proficient: daily
- **git** — extensive: daily
- **Clang** — extensive: daily
- **GCC** — wide
- **Premake** *(4.x)* — proficient: daily
- **GNU Make** — wide
- **Sublime Text** *(2)* — proficient: daily
- **vim** — narrow: daily
- **IDA** *(5.x)* — narrow
- **Visual Studio** — narrow: professional (I avoid IDEs)
- **Blender** — narrow: general use, extensive automation (scripting)
- **Microsoft Excel** *(2010)* — extensive: professional
- **Google Sheets** — proficient: professional
- **InstallShield** *(17–21)* — proficient: professional
- **Windows Installer (MSI)** *(3.0–5.0)* — extensive: professional
- **AdminStudio** — extensive: professional
- **Windows** *(XP, 7–8.1)* — extensive

¶ spoken language

- **English** *(U.S.–U.K. hybrid; U.S. dominant)* — proficient *(C1-C2)*: first language
- **French** *(Standard/Metropolitan)* — narrow *(A1)*: actively learning
- **Japanese** *(Eastern/Tokyo)* — minimal *(sub-A1)*: pronunciation, kana, few kanji, few phrases
- **Greek** *(Koine)* — minimal *(sub-A1)*: pronunciation, script

¶ rank key

1. proficient
2. extensive
3. wide
4. narrow
5. minimal

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