Blair Gemmer {blairgemmer.com – blair.gemmer@gmail.com – 406.253.4962}

Experience

Freelance Software Engineer May 2009 – Present
{Missoula, Montana}

- Developing and maintaining custom web applications for local and international clients, leveraging frameworks like React, Django, and Flask.
- Building bots for Slack and Discord to automate workflows, integrate APIs, and streamline team communication.
- Providing technical consultation on product strategy and MVP creation, helping startups refine user feedback loops and product roadmaps.
- Automating deployment pipelines using GitHub Actions and serverless architectures for cost-effective, scalable hosting solutions.
- Contributing to FOSS (Free and Open-Source Software) projects, focusing on collaborative code reviews and community engagement.

Impact: *By combining technical expertise with practical consulting, my freelance work empowered a wide range of clients to launch, optimize, and grow their digital presence—no matter their starting point or technical background.*

Software Engineer **VYNYL, LLC** March 2021 - April 2024
{Remote}

Happier Living (Healthcare)

- Developed a web-based, mobile-responsive customer portal integrating AWS Lambda, SQS, SNS, S3, DynamoDB, and Step Functions for virtual healthcare appointments (Zoom consultations, Athena scheduling).
- Utilized Serverless Framework to streamline deployments, ensuring rapid iteration and reduced operational overhead.
- Built CI/CD pipelines with GitHub Actions, employing Python's unittest for robust unit and integration testing.
- Leveraged PynamoDB to model DynamoDB data schemas, ensuring maintainable and scalable interactions.
- Used AWS X-Ray and CloudWatch for performance monitoring and quick diagnostics.

UCSF Multitudes (Early Childhood Education)

- Built and maintained Playwright-based integration tests for a tablet app aimed at detecting early learning disabilities (e.g., dyslexia).
- Automated data validation by comparing CSV files to database entries via custom Python scripts, improving data integrity.

Additional Achievements

- Delivered fault-tolerant solutions through DevOps best practices, comprehensive monitoring, and responsive incident management.
- Collaborated with cross-functional teams (front-end, QA, product) to deliver high-impact features under tight deadlines.

Impact: *Advanced the reliability, scalability, and overall performance of mission-critical healthcare and education applications by combining Python engineering with DevOps excellence.*

Software Engineer **Submittable, Inc.** September 2019 – March 2021
{Missoula, Montana}

DevOps Management:

- Orchestrated the full software development lifecycle and production deployments using AWS CodePipeline.
- Automated release communications via GitHub release notes, integrated with Slack for real-time updates.
- Built and maintained test and production environments in AWS CloudFormation, leveraging the Serverless Framework.
- Developed and debugged build automations with AWS CodePipeline, AWS EventBridge, and AWS Lambda.
- Oversaw AWS IAM for secure account and permissions management.
- Reviewed and merged Dependabot PRs to ensure continuous security and dependency hygiene.
- Managed SecOps tasks with AWS Certificate Manager, EC2, ELB, and RDS, scaling infrastructure as needed.
- Configured domain routing via AWS Route 53 and set up CloudWatch alarms for proactive monitoring.
- Acted as on-call responder, debugging production issues and performing emergency fixes or rollbacks to minimize downtime.
- Reduced deployment overhead by 30% through process automation.
- Improved release cadence from weekly to daily.

Impact: *Streamlined the deployment process, reduced release overhead, and maintained near 24/7 service availability for a large-scale document submission platform.*

CTO **TOMIS, Inc.** September 2016 - July 2019
{Missoula, Montana}

Technical Lead:

- Owned product design from the executive vision stage through technical implementation.
- Drove the design and development of detailed technical specifications.
- Created realistic strategies and timelines to fulfill short- and long-term goals.
- Researched emerging technologies; built prototypes and proofs-of-concept.
- Led the back-end team in designing, developing, and QA'ing REST APIs (Python/Django).
- Assisted front-end teams (React.js) with quality assurance and key design decisions.

Project Management:

- Served as Scrum Master, overseeing Jira design, organization, and Agile ceremonies.
- Held daily standups, weekly sprints, and managed the Jira issue board (creation, curation, triaging).
- Administered repository management in Bitbucket; integrated team communication via Slack.
- Organized Confluence documentation and utilized Jira NextGen Kanban to prioritize epics.
- Wrote comprehensive release notes from Jira releases using Confluence templates.

DevOps Management:

- Oversaw the software and API development lifecycles, enforcing commit-quality rules and code review processes.
- Maintained rigorous branch management (feature, release, hotfix) for healthy deployments.
- Employed Bitbucket pipelines for automated testing on feature branches.
- Managed release tagging using Jira and Git; tracked bugs and feedback through Usersnap.

Site-Reliability Engineering:

- Monitored application performance via DataDog and Honeycomb.
- Utilized Stackdriver and DataDog for logging, infrastructure monitoring, and incident detection.
- Configured Sentry (with Jira integration) for exception reporting and ticket creation.
- Ensured uptime and alerted stakeholders using UptimeRobot; tracked incidents and post-mortems in Statuspage.io.

Impact: *Spearheaded the creation of a pioneering SaaS solution for tour operators, automating workflows and delivering actionable business analytics.*

Co-Founder, CTO **dotmos, LLC.** July 2015 - January 2017
{Missoula, Montana}

Technical Lead:

- Drove the design and development of core product features, creating technical specifications for a social media/search aggregation platform.
- Oversaw front-end and back-end architecture, leveraging Django, Node.js, and React.js.

Lead Software Engineer:

- Implemented full-stack solutions, integrating multiple external APIs into a cohesive user experience.
- Ensured quality and maintainability through code reviews, testing, and iterative development.

Project Management:

- Led a cross-functional development team, managing repositories, issue tracking, and documentation.
- Coordinated communications using tools like BitBucket/Git, Asana, DeployBot, Intercom, Usersnap, Open Analytics, and Slack.
- Analyzed data and user feedback to drive continuous product improvements and feature prioritization.

Impact: *Unified diverse social media and search platforms into a single, user-friendly interface—enhancing discovery and engagement for both end users and content providers.*

Data Scientist, Software Engineer **Upstream Research, Inc.** November 2015 – September 2016
{Missoula, Montana}

Data Scientist:

- Acquired and analyzed large, geography-based data sets to create and update ArcGIS services.

Software Engineer:

- Wrote and tested automation scripts in Python/ArcPy.
- Developed an ASP.NET MVC application in C#, devising unique solutions for novel problems.

- Wrote and supported custom functions in PostgreSQL.

Quality Assurance:

- Conducted user-testing, wrote QA reports, and developed Python scripts to test and load-test REST API endpoints.

System Administration:

- Deployed software releases, upheld SLA requirements for uptime, and applied security updates/patches.
- Managed Azure resources using Visual Studio.

Customer Support:

- Interfaced directly with customers, troubleshooting software and user issues via Freshdesk.

Impact: *Unified diverse datasets into actionable insights for health and community planning, streamlining operations and enhancing data-driven decision-making across multiple stakeholders.*

Security Consultant **LMG Security** February 2015 – May 2015
{Missoula, Montana}

Client Engagements:

- Assisted a diverse client base (banks, hospitals, retail outlets) with security assessments.
- Performed a range of vulnerability and penetration tests (internal/external), along with web and mobile application security analyses (WASA) and wireless infrastructure assessments (WIA).

Reporting & Reviews:

- Authored detailed findings for each engagement, presenting results to both technical and non-technical stakeholders.
- Conducted technical reviews on assessments conducted by other consultants, ensuring thoroughness and accuracy.

Impact: *Strengthened clients' security postures through comprehensive testing and clear, actionable recommendations—mitigating vulnerabilities across multiple industries.*

Senior Software Developer **Hanna-James Enterprises, LLC.** July 2014 – February 2015
{Missoula, Montana}

Test Automation:

- Developed terminal-based test automation software in Python to streamline QA workflows.
- Built a proof-of-concept prototype for D3-based Tor network tracking software in CoffeeScript.

GUI-Based Tools:

- Created a GUI-based test automation application using Python (GTK).
- Wrote architectural specifications in LaTeX to ensure clarity and maintainability.

Database Architecture:

- Designed and implemented a MySQL database for an SDK toolkit.
- Created a Python-based data abstraction layer to manage tool insertion, expansion, and execution workflows.

Documentation:

- Authored comprehensive specification documents for a GUI-based SDK architecture using LaTeX.

Impact: *Delivered robust automation and data management solutions that improved software quality, reduced development cycles, and provided a solid foundation for future product expansions.*

Education

University of Montana-Missoula
M.S. Computer Science, emphasis in *Machine Learning, Data-Mining, and Simulations* May 2014

University of Montana-Missoula
B.A. Psychology, minor in *Math, Media Arts* May 2010

Teaching

Teacher's Assistant **Programming Languages** Spring 2012
Teacher's Assistant **Computer Ethics** Fall 2011
Instructor **Computer Modeling** Fall 2010 - Spring 2011
{University of Montana-Missoula}

- Taught advanced features of Microsoft Excel and Access to freshman and sophomore students, providing hands-on support during lab sessions.

- Graded assignments, papers, and exams; maintained office hours for one-on-one tutoring and fielding student questions.

Mentor **The Firehose Project** Fall 2014 - Fall 2015
{https://thefirehoseproject.com/}

- Provided weekly, one-hour online video sessions to answer coding questions and walk through code samples.
- Offered email-based office hours for further questions and code reviews.
- Participated in online group discussions on larger collaborative projects.

Technical

Languages

- **Proficient:** LaTeX, Python, Bash, JavaScript, Matlab, R, Markdown
- **Familiar:** C/C++/C#, Coffeescript, OCaml, Perl, Ruby
- **Willing to Learn:** Dart, Go, Haskell
- **Prefer not to use:** PHP, Java

Frameworks & Libraries

- **Web & Backend:** Django, Django REST Framework, Flask, ASP.NET
- **JavaScript:** React.js, Vue.js, Node.js
- **Favorite Python Modules:** BeautifulSoup4, Celery, Matplotlib, NumPy, ØMQ, Pandas, Redis, Requests, SciPy, Scrapy, Spyder
- **Automation / Multitasking:** Celery, Redis, RabbitMQ, ØMQ
- **Machine Learning:** Keras, PyBrain, PyTorch, Scikit-Learn, TensorFlow
- **Data Visualization:** D3, Matlab, Matplotlib, R

Databases & Data Handling

- Access, CSV, JSON, MySQL, PostgreSQL, RESTful APIs, SQLite, SQL Server, XML, YAML

DevOps & Cloud

- Atlassian (Jira, Confluence, Statuspage, Bitbucket Pipelines), DeployBot
- AWS, Azure, Google Cloud Platform
- Docker, Kubernetes
- Bitbucket / GitHub (GIT), Mercurial

Development Environments

- Atom, Android SDK, PyCharm, SublimeText, VIM, Visual Studio / VSCode, XCode

Development Techniques

- Agile Methodology (Scrum, Kanban), Behavior-Driven Development
- Iterative & User-Centered Design, Rapid Application Development, Test-Driven Development

Communication Tools

- Discord, Google Hangouts, IRC, Join.me, Skype, Slack, UberConference, Zoom

APIs & Bots

- **APIs:** Darksky, Discord, Facebook, Google (Ads, Analytics, Maps, Places, Search Console), Instagram, Mailchimp, Pinterest, Rebrandly, Rezdy, Slack, Twilio (SMS / SendGrid), Twitter, Web CEO, Xola
- **Bots:** Discord, Slack

Network Security

- Aircrack-ng, Burp Suite Pro, Kali Linux, Kismet, Metasploit Framework, Nessus, NeXpose, Nmap, Wireshark/tshark

Operating Systems

- Debian and Red Hat-based Linux, Mac OS X, Windows

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Selected Projects

A list of some of my favorite personal and graduate projects, not specifically listed in my work experience, that I had the most fun on. The source code for most of the following projects is on GitHub **@blairg23**.

Grad Projects

Bak-Tang-Wiesenfeld Model for Displaying Self-Organized Criticality (Python/Matplotlib) Spring 2012

(*Abelian Sandpile Model, Python/Matplotlib*)

{CSCI 577 – Computer Simulation and Modeling, Dr. Jesse Johnson}

- **Context & Purpose:** Modeled Per Bak's sandpile system to show how incremental changes (grains of sand) lead to large-scale avalanches, reflecting Self-Organized Criticality (1/f noise).
- **Tools & Technologies:** Python (Matplotlib, NumPy), MATLAB (for comparative speed tests/animations), cellular automata design, data visualization.
- **Key Contributions & Outcomes:**
  - Implemented a configurable cellular automaton (critical slope, dribble location, iterations).
  - Demonstrated 1/f noise behavior: frequent minor topples, rare large-scale avalanches.
  - Created animations in Python *and* MATLAB to compare performance and ease of use.
  - Delivered a formal presentation and write-up explaining the model's biological/physical significance.
- **What I Learned:** Strengthened skills in Matplotlib animation and deeper understanding of self-organized criticality, bridging theory and practical simulation.
- **Next Steps / Improvements:** Explored potential for a 3D version and refined Python's animation performance to approach MATLAB's speed.

Source Code: `github.com/blairg23/Bak-Tang-Wiesenfeld-Sandpile-Model`

Earthquakes in the World (Python/Matplotlib Basemap) Fall 2011

A comprehensive infographic plotting global seismic events to demonstrate data visualization principles.

{CSCI 444 – Data Visualization, Dr. Jesse Johnson}

- **Context & Purpose:** Created visually stimulating infographics of worldwide earthquake events (1973–2009, plus historical worst-case quakes) to highlight both the frequency and magnitude of global seismic activity.
- **Tools & Technologies:** Python (Matplotlib, Basemap), CSV data handling, data visualization principles (Tufte's *Beautiful Evidence*).
- **Key Contributions & Outcomes:**
  - Imported and cleaned two datasets: 17,143 events from 1973–2009 and 87 historically "worst" events (1902–2011)
  - Used Basemap to plot each quake's longitude, latitude, magnitude, and date as layered scatter plots.
  - Experimented with colormaps, alpha channels, subplots, and high-definition output for engaging visuals.
  - Delivered a final draft of static plots and animations, accompanied by a short write-up and in-class presentation.
- **What I Learned:** Gained insight into how easily graphs can mislead if poorly designed, and how to follow best practices (Edward Tufte's guidelines) to present complex data honestly and effectively.
- **Next Steps / Improvements:**
  - Incorporate **audio representation** to map quake magnitude to pitch or volume.
  - Add an **interactive globe** or cumulative "breadcrumb" map showing quake events over time.
  - Expand the lower subplot to highlight the affected geographic area for each quake.

Source Code: `github.com/blairg23/Earthquakes`

Hoot (Wolf Box) Spring 2010

A hardware/software solution for broadcasting and recording sounds in adverse climates.

{CS 442 – Advanced Programming II, Dr. Joel Henry}

- **Context & Purpose:** Addressed the Biology Department's need for a portable "Wolf Box" that could broadcast loud wolf calls (90–100 dB) and record return howls without a laptop in the field.
- **Tools & Technologies:** C#, Visual Studio (rapid application development), custom hardware (speaker & mic), battery-efficient design, Linux-based or netbook alternatives for low power consumption.
- **Key Requirements & Challenges:**
  - Eliminate the need to carry a laptop; ensure easy field troubleshooting.
  - Provide higher speaker volume ($\geq$ 90 dB) and better mic quality.
  - Achieve up to 7 days of field use (2 broadcasts/records per day) on a single battery charge.

  - Ensure lightweight hardware with reliable off-grid operation.
  - Improve file handling to prevent corruption and confirm successful audio captures.
- **My Role:** Gathered user requirements, arranged regular feedback meetings, and documented team progress. Helped develop a medium-fidelity C# prototype and authored a professional-grade user manual.
- **Outcomes:**
  - Successfully replaced older software/hardware with a robust solution surpassing volume & battery standards.
  - Biology Department continued using the final product; recognized its cost-effectiveness and reliability.
  - Delivered a polished system within one semester, exceeding user expectations in functionality and user-friendliness.
- **Lessons & Future Improvements:**
  - Validated rapid application development in C# for quick prototyping.
  - Would explore cheaper hardware (netbooks) and refine testing for fewer defects.

Source Code: `github.com/blairg23/Hoot-Wolf-Box`

Particle Simulator (Python/OpenGL) Fall 2011

A visualization of granular convection (Brazilian Nut Effect) via 3D particle physics.

{CSCI 444 – Data Visualization, Dr. Jesse Johnson}

- **Context & Purpose:** Demonstrated how smaller particles behave in a fluid-like manner around larger ones, modeling the Brazilian Nut Effect. Generated user-defined flows of randomly sized spherical "nuts" in a 3D Python/OpenGL environment.
- **Tools & Technologies:** Python, OpenGL (translated from C++ syntax), color-mapped velocity visualization, adjustable bounding boxes and flow rates.
- **Key Contributions & Outcomes:**
  - Implemented a dynamic driver to inject spheres with varying velocities (approximately –2 to +2), normalizing RGB color values to depict speed and direction.
  - Rendered multiple views (top, side) and experimented with external/internal light sources.
  - Delivered a brief write-up and animations showing fast, medium, and slow flow in different bounding-box sizes.
- **What I Learned:**
  - Gained insight into solid objects displaying "fluid-like" motion under certain conditions.
  - Realized how easily C++-based OpenGL code translates into Python, benefiting from Python's readability.
  - Managed memory constraints on lower-end systems, balancing large particle counts with real-time rendering.
- **Potential Improvements:** Add a GUI for controlling lighting, camera zoom, color materials, and alpha channels, as well as user-defined drip flow rates and bounding-box sizes without editing source code.

Source Code: `github.com/blairg23/Particle-Simulator`

Personal Projects & Hobbies

Automation & Scripting:

- **BetterPassword**: A script to convert easily remembered passwords into secure, hashed passwords for improved online security.
- **delete-files**: Recursively removes files within a directory matching a given regex pattern.
- **rename-images-to-datetime**: Renames image files based on their creation datetime to ensure uniqueness.
- **files-in-folder**: Compares two directories using MD5 hashes, outputting differences in CSV format.

Data Processing & API Wrappers:

- **Bookmarks Manager**: A RESTful API to import Chrome bookmarks, tag them smartly, enable social sharing, and manage link quality.
- **Expensive**: Parses CSV files to build a financial transaction database for spending analysis and budgeting.
- **create-api-wrappers**: Generates Python wrapper methods from API endpoint lists and parameters.
- **TweetyPy**: A Python Twitter client with a wrapper method for every Twitter REST API endpoint. Powered by **Reynold's RESTful Wrapper©**.
- **omdbpy**: A minimalist Python wrapper for the Open Movie Database (OMDb) API.

Web Scraping & Multimedia:

- **images-from-url**: Scrapes images from given URLs or REST APIs, supporting platforms like Imgur, Instagram, and Tumblr.
- **Nutflux**: A suite of small applications centered around multimedia consumption, Nutflux© started as a Netflix clone for consuming your local multimedia collection. Now this suite contains multiple utilities for create a better multimedia experience.

  movie-decider
  An application that takes your current multimedia collection and helps decide what you want to watch based on a series of mood questions.

  movie-file-fixer
  An application for formatting poorly formatted movie filenames, adding a movie poster from IMDb, and adding subtitles based on the md5 hash of the file. Recent commits were a huge refactor to add test automations, unit tests, and CI/CD pipeline.

  movie-tv-show-reminder
  An application that reminders you when your favorite shows have new episodes or a new season.

  movie-viewer
  A Netflix clone that uses the Plex API to showcase your multimedia collection.

  music-file-fixer
  Like movie-file-fixer, but for music files.

These projects reflect my curiosity, versatility, and dedication to continuous learning and innovation. Most source code is available on GitHub @blairg23.

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Professional References

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