

COMPUTER SKILLS

- **Operating systems:** DOS, Windows, UNIX/Red Hat/Fedora/Ubuntu/Mint, and some Macintosh.
- **Languages:** C/C++, C#, Python, PHP, JavaScript, HLSL, Perl-CGI, Java, Ada, Motorola Assembly, Hypertalk. Some VB.
- **APIs and SDKs:** Qt, ffmpeg/libav, WIN32, ActiveX/COM, ATL, WNet, Matrox MIL, WxWidgets, TENA, DirectShow, WM Format SDK, VFW, GDI, OpenCV, Unity/ECS, and many others (mostly related to optic and video equipment).
- **Database Query Languages & Platforms:** Access/DAO, MSQL, MySQL
- **Electronics:** Basic experience with both digital and analog circuitry design. Computer assembly/architecture - Mini/Micro/ATX and PC104. Familiarity with NTSC and HD video formats.
- **Protocols:** Programmed communication modules for hardware devices operating via RS-232, TWAIN, CameraLink/Coaxpress/DVI/HDSDI/GigE, Ethernet/TCP, HTTP, MIDI, X10, KLV, USB, Pelco-D, Visca, ONVIF, and too many one-of-a-kind manufacturer formats to mention.
- **Related Skills:** Professional graphic design, excellent technical writing/documentation abilities, and product development cycle knowledge.
- **Workflow:** Git, SVN, Jira, Jenkins, Visual Studio, Qt Creator, and Eclipse.

EDUCATION

- Bachelor's Degree, Computer Science, Montana State University Bozeman, May 2002
- High School Diploma, Bozeman High School, June 1996

SECURITY CLEARANCE

- 2018+: Secret Security Clearance obtained at WSMR, NM

WORK HISTORY (Continued)

RESEARCH AND PROJECTS

- Artificial Intelligence, Robotics, Computer/Machine Vision, Image Processing Algorithms, Voice Synthesis/Recognition, Servo Control Systems
- Learning Algorithms - Bayesian Classifiers, Back Propagation, Competitive Weights, Self Organizing Maps, Learning Vector Quantization, Fuzzy Logic
- Quantum computing
- Recursive fractal algorithms
- Designed several plugin systems
- Raytracing and simulation - Raytracer design and implementation
- Low latency video capture and compression
- Wrote a cryptocurrency trading bot for high-frequency trading
- Multithreaded game development with an ECS architecture

WORK HISTORY

2019-Current. Advanced Sponsored Research Support MiiTech - Montana State University and Department of Homeland Security (Bozeman, MT)

At MiiTech, I am the lead software subject matter expert responsible for evaluating and reporting on the viability and readiness-level of cutting edge emerging technologies from a software feasibility perspective. These technologies typically originate from laboratories and government entities throughout the country.

2004-2018. Computer Scientist/Software Engineer Trax International (White Sands Missile Range, NM)

Performed research and development in technologies pertaining to optical tracking used for evaluation of military projectiles and combat scenarios. Work at Trax was on a per project basis - with some undertakings lasting a few months and others spanning several years. Among the more interesting accomplishments were tasks specializing in gimbal based target tracking systems via image processing and/or telemetry, video compression algorithms, real-time 3D situational awareness, mathematical modeling and simulation, and extremely low latency video capture/network streaming. Projects were normally approached in teams and were successful as a result of some of the brightest and ambitious individuals in their areas of expertise.

2001-Fall 2001. Software Engineer
Fuzz Technologies (Bozeman, MT)

PHP and MySQL were combined to create an advanced web-based graphical interface for customer service representatives. The use of regular expressions to parse web pages for pertinent information was a major focus of the operation.

2000-2001. Cofounder/President and Web Developer
ByteHammer Media. (Bozeman, MT)

Activities included: money management, customer relations, advertising, web-site design and planning, e-commerce system development, and thousands of hours of web programming. Working with graphic editors and writing code in various web languages were part of the day-to-day workload.

1999. Lab Technician

Burns Telecommunications Center. (Bozeman, MT)

Responsibilities included keeping the lab's computers and network running smoothly and assisting customers with projects such as slide scanning/printing, laser printing, poster printing, CD-ROM front-end creation, video editing, web-development, and electronic visual presentations. The most common applications employed were PhotoShop/ImageReady, Dreamweaver, PowerPoint, and Director. The various operating systems in use were Windows 98, NT4, Mac OS 8 through 9, and FreeBSD. Instructed individuals and small groups of users in multimedia presentation and creation techniques.

1999. Web Master

EHHD Dept. at Montana State University. (Bozeman, MT)

Implemented a web-based message board for local student teachers. Tutored staff members concerning web-development and maintenance procedures. You gotta start somewhere! :-)

2001-2004. Software Engineer

Southwestern Cotton Ginning Research Lab (Las Cruces, NM)

Programmed an interface and image processing framework using Visual Studio and C++, which functions as the front end for a machine vision system that analyzes a video stream of cotton flow during the process of ginning. Data is gathered from the captured images via image processing algorithms/blob analysis and supplied to a trained backward propagating neural network, which makes a conclusion based on the amount of unwanted particles in the cotton to determine the next stage to carry out in the ginning process. The resulting decision saves time and energy since less wash cycles may be used on cleaner batches. (See <http://clemens.bytehammer.com/papers/CottonEye/> for project details.)