David Topper

www.davetopper.com

djtopper2@gmail.com

(434) 260-0226

Experience

Kythera Space Solutions, Bethesda MD 2024-present ***Lead Software Engineer***
https://www.kythera.space/

Lead dockerization efforts as well as interface with, analyze and deploy client services. Work on planning and optimization software for next generation communication satellites. Implementation in C++ with OpenAPI front end, Swagger data models, deployment to Docker containers running in Kubernetes.

Amazon, Arlington VA 2023-2024 ***Software Development Engineer***
https://aws.amazon.com/

Developed new Human Capital Management (HCM) software using AWS CloudFormation tools. API Gateways with EC2, Lambda or Step Function backends in Java utilizing S3, DynamoDB, OpenSearch and Redshift. Data handling via Smithy, Coral, and SQS/SNS. Application metrics via AWS Cloudwatch and Quicksight tools.

Kythera Space Solutions, Bethesda MD 2020-2023 ***Lead Software Engineer***
https://www.kythera.space/

Led team of engineers in upgrading satellite planning and optimization software for the Australian National Broadband Network (NBN). Created C++ and Python applications with a primary Qt5-based GUI which communicated to several project-specific Linux system daemons, interfaced with external services such as the Payload Control System and Monics Carrier Monitoring System via dbus and gRPC. Managed sprints and created stories to match CDRL requirements. Developed UI as well as multithreaded optimization algorithms.

Amazon (AWS) Security, Herndon VA 2019-2020 ***Software Development Engineer***
https://aws.amazon.com/

Developed certificate authority (CA) server to manage, sign and authenticate encrypted digital certificates for dedicated secure AWS region. Worked on developing improvements as well as increasing reliability, primarily in Java with AWS Coral IPC on EC2 Implemented solutions using AWS deployment, integration and testing tools using Perl, Python and Unix shell. Completed phase one of Amazon Machine Learning University (MLU Math).

Clear Edge 3d, Manassas VA 2016-2016 **Senior Software Engineer**
http://www.clearedge3d.com/

Implemented upgrades and new features to company's proprietary EdgeWise software in C++ using Microsoft Visual Studio 2015. Projects ranged from improving 3d object detection from point cloud data (typically LIDAR or photogrammetry based) file processing, enhancements to feature extraction, bug-fixes and stability enhancements.

Niitek (now Chemring Sensors), Dulles, VA 2014-2016 **Software Engineer**
www.chemringsensors.com

Contract position on site at client facility. Worked on software for ground penetrating radar (GPR) system. Using the Qt IDE and libraries in C++, implemented new modules and GUI elements to meet US government requirements. Designed standalone applications for data analysis and visualization with OpenGL.

University of Virginia, Charlottesville, VA, 1997-2014 **Technical Director**
http://music.virginia.edu/vccm ***Virginia Center for Computer Music***

Managed and supported computer music facilities and projects. Provided research and software development for student, faculty and personal projects (below). Designed and maintained studios with computer and audio hardware to facilitate composition and research. Constantly evaluated new technology to enrich lab environment.

NOMADS: Network Object Mobile Agent Dynamic System - www.davetopper.com/nomads
A real-time, interactive network for mobile devices and web clients for Java, iOS and Android.

BIT: Being In Time - vimeo.com/72104801
Kinect-based skeletal tracking system to control live processing and audio events via hand and body gestures.

VScore: A Visual Application For Scoring Music - www.davetopper.com/wp-content/uploads/2018/12/Vscore.pdf
Application for synchronized playback of graphical music scores and meta-event written in C++ using Qt4.

WISEAR: Wireless Sensor Array - www.davetopper.com/wp-content/uploads/2018/12/wisear05.pdf
Hardware and software translated live dance movement into sound.

David Topper

djtopper2@gmail.com
www.davetopper.com
(434) 260-0226

Spatio-Operational Spectral Synthesis (SOS) - www.davetopper.com/wp-content/uploads/2018/12/SOS-1.pdf
Technique for spatializing audio signals in real-time with spectral components routed into discrete "audio objects" capable of moving through a multichannel environment, written in C++ via the RTCmix audio engine.

GAIA: Graphical Audio Interface Application - www.davetopper.com/wp-content/uploads/2018/12/gaia2004.pdf
Graphical music programming and composition environment written in C using Gnome/GTK UI libraries. Built upon the architecture to perform live video processing video4linux to control audio and musical events. A specific implementation, Tree Music, ran for more than two months continuously at the UVA Art Museum.

Multichannel RTcmix - www.davetopper.com/wp-content/uploads/2018/12/multichan_rtcmix_js2k-1.pdf
Co-authored additions to the RTCmix music language, implementing a multichannel digital bus architecture.

Time Inc., New Media. Pathfinder, New York, NY, 1996-1997 — **Associate Systems Engineer**
https://en.wikipedia.org/wiki/Pathfinder_(website) — ***Website Usage, Analysis and Tracking***

Authored key components to a customized reporting system that provided Time Inc. managers with detailed reports on website traffic. Implemented using CGI, Perl, Sybase SQL Server and Platinum Technology's Autosys. Authored web-based front end for display and analysis of multidimensional data using the Perl GD library.

Columbia University, Electronic Music Center, NY, 1995-1997 — **Research Assistant**
www.rtcmix.org

Co-authored with Prof. Brad Garton a real-time version of the Cmix music language. Project involved programming in C and C++ on Linux, NextStep and SGI Irix. Specific work focused on coding a dynamic, real-time scheduling algorithm in C++ capable of handling asynchronous events. RTCmix currently also runs under iOS and Android.

Delphi Economics Inc., Weehawken, NJ, 1988-1993 — **Researcher**
https://www.vikingen.se — ***Investment Trading and Research***

Managed operations for the US office of a Scandinavian investment research firm. Maintained stock databases sold both in the U. S. and in Europe. Designed automated software to download and process EOD price data. Created interactive tutorials on how to design and back-test trading strategies, using proprietary "Viking" software.

Education

Columbia University, New York, NY, 1991-1996
B.S., Computer Science, Cum Laude, Minor in Music

Cornell University, Ithaca, NY, 1987-1988
Political Science and Philosophy

Languages Tools and Environments

C, C++, Java, ObjectiveC, Perl, Python, IOS, Android , Qt, Gnome, GTK, OpenGL, OpenCL, Yacc, Lex, Perlembed, SQL, Unix Shell, Json, XML, Apache, Linux, MacOS, Gumstix, Arduino, Make, Cmake, Git, CVS, SVN, APIGateways, DynamoDB, OpenSearch, AWS Lambda, EC2, QuickSight, Redshift, SQS, SNS, gRPC, dbus.

Personal Research

Algorithmic Stock Market Trading, 2009-present
www.davetopper.com/algorithmic-trading

Develop systems to test, optimize and implement proprietary trading strategies via multithreaded, distributed application written in C++ with QT and boost libraries running on a Linux CPU cluster. Also work on parallelizing the environment to run efficiently on a GPU cluster (openCL/CUDA).

Other Interests

Aviation (VFR private pilot), Sailing, SCUBA diving, 3d printing and scanning, CAD modeling, Bitcoin mining.
Proficient in Italian, writing and speaking.