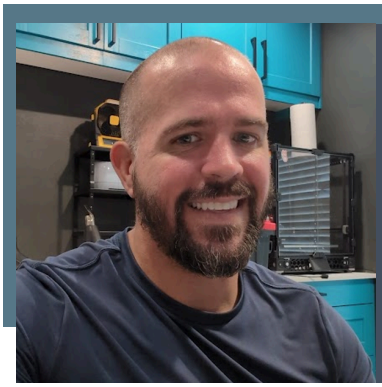

PAUL KNOPF

Lead Engineer/Architect

pauldotknopf@gmail.com

(941) 807-5340

pknopf.com

github.com/pauldotknopf

twitter.com/pauldotknopf

CAREER SUMMARY

I am a passionate engineer and exceptional problem solver, doing what I love for a living.

I have an intimate understanding of the SDLC, with strong leadership skills that enable me to be effective. I have led and scaled large teams for mission-critical systems, establishing architecture, processes, and best practices to ensure quality and reliability.

With a strong emphasis on simplicity, low ceremony, and an understanding of team capabilities, I ensure that my solutions are built-to-last and move fast based on changing requirements; while also ensuring that even junior engineers can contribute and be effective.

From an individual contributor perspective, my expertise includes a deep understanding of the full stack, encompassing infrastructure provisioning, security/networking, application development, testing, deployment and observability. I'm always learning and keeping up-to-date with the latest technologies and best practices.

I manage a few open-source projects in different languages, including JavaScript, C# and Go.

SKILLS & TOOLS

General

Architecture/Design · Networking · Security · Mentoring/Speaking · Agile/Scrum

Languages

C# · HTML/CSS · TypeScript/JavaScript/Node · Go · C++/C · Unix Shell Scripts · SQL · Python

Client-side

React · redux · MobX · webpack/vite · Jest · Sass/LESS · Bootstrap · jQuery

Mobile

iOS/Android (Xamarin) · xCode · UIKit · Objective-C

Operating systems

Unix/Linux · OSX · Windows

Cloud

Terraform · Microsoft Azure · Google Cloud · Kubernetes · Containers (docker/lxc) · Azure Pipelines/GitHub Actions/Jenkins

Databases

Postgres · MongoDB · SQL Server · SQLite · Cassandra · Lucense/ElasticSearch

WORK EXPERIENCE

Lead Engineer

Ensemble Health Partners

Aug 2022 - Present

- Led several teams/initiatives.
- Established an ecosystem of libraries, frameworks and pipeline templates to enable rapid development/deployment of various workloads (microservices, Azure resources, terraform, etc).
- Rollout of kubernetes clusters, established the process for teams to deploy/mantain/monitor their workloads.
- Design/implementation/rollout of a micro-frontend client-side architecture, enabling teams to develop modules locally and deploy them into a single integrated client-side application.
- Design/implementation/rollout of Temporal for orchestrating workflows, combining new/legacy systems, creating new use-cases.
- Design/implementation/rollout of CQRS pattern, addressed upper performance limits of our current architecture, resulting in dramatic performance improvements, and significant savings through database SKU optimization.
- Regular presentations to the company on new technologies, best practices, and architecture.

Technologies used:

Architecture .NET Core Microservices Dapper/OrmLite Kubernetes React/TypeScript Micro-frontends Temporal Azure DevOps Azure Terraform ElasticSearch Postgres Redis

Technical Lead

Novanta Surgical Imaging

July 2019 - Aug 2022

Managing a team of people on a wide-array of projects across different languages/platforms.

Some key points:

- Overseen design/implementation of next-generation perscriptive architecture/platform for medical imaging software.
- Protobuf/gRPC microservice architecture with a focus on performance and stability, emphasis on golang.
- Cooridination with firmware team to ensure driver/software development feature parity.
- ASP.NET (and .NET Core) React application/MVC APIs, multi-tenancy, on-site deployments with automated updates.
- Established usage of IDesign's "The Method", an approach for system and project design.

Technologies used:

Architecture .NET ASP.NET MVC Microservices Protobuf/gRPC Docker SQLite/MongoDB/Postgres C/C++ Golang JavaScript/TypeScript Cloud (Microsoft Azure) CI/CD (Pipelines) Unit Testing

Senior Software Engineer

Med X Change

Nov 2012 - July 2019

Thought leader for a small team of developers in the embedded and web space.

Some key points:

- Manage IT infrastructure for software (build agents, on-prem GitLab, etc) and project management.
- Embedded .NET Core runtime in native executable, integration interop with V8.
- iOS/Android application development using the Xamarin platform.
- ASP.NET WebAPIs for consumption in mobile platform.
- DirectShow and gstreamer for encoding/decoding with various video formats, including H264/MP4.
- WPF and Qt/QtQuick implementations of digital recording software on embedded devices.
- C++/C for internal libraries used to connect to record video and connect to hospital networks (DICOM/HL7).
- Custom Embedded Linux distros for embedded devices (Yocto).
    - Brickless update design.
    - Read-only boot with `tmpfs` overlay for stability and resilience.
- Compilation and cross-compilation (vc++, gcc, MAKE, CMAKE, meson, autotools, etc).

Technologies used:

.NET | ASP.NET MVC | WPF | Qt | Docker | SQLite/Postgres | C/C++ | Golang | JavaScript/TypeScript | DICOM/HL7 | Linux (Embedded, Sys Admin) | Cloud (Google Cloud Platform) | CI/CD (Pipelines) | Unit/integration testing

Software Engineer

MethodFactory

Jun 2011 - Dec 2012

- Managed/maintained production instances of IIS/SQL Server for many high-volume sites (coleman.com, rawlings.com).
- Managed a prescriptive framework written in C# .NET 4.0 used to accelerate and model application development according to industry best practices.
- Managed an internal automated NuGet feed (using TFS Build) for delivering updates.
- Database design and development. Managing indexes/performance. Troubleshooting with SQL Profiler.
- Created a process to managing SQL Server Database Projects (SSDT) so that framework libraries can be distributed with matching .dacpac files for client schema updating/generating. The process also included automated deployments of database schema and projects from TFS builds for Continuous Integration and validation of the build.
- Wrote and managed C# TFS Build Activity that creates and deploys multiple NuGet packages.
- Implemented an enterprise WCF Service Host Factory that uses IoC (Dependency Injection) to resolve contracts for runtime composability.
- Created WCF Services using REST/JSON for use on client side widgets.
- Created an MVC3/jQuery eCommerce UI foundation for eCommerce websites. Delivered to projects in a .zip file delivered by a VirtualPathProvider for easy updating and ensuring stability. Added support for overriding at every level (css/js/view) for client specific adjustments using a MVC ViewEngine and a client-side dependency management framework (Cassette).
- Implemented/created a jQuery plugin in ASP.NET MVC3 to enable extensible keyboard navigation with 100% client-side interaction from the point of entry.
- Designed enterprise N-tier framework to be reused by multiple enterprise clients (Coleman, Nuk, Rawlings).
- Designed/developed software for medical equipment for capturing and recording pictures and videos using MSMQ/NServiceBus/SignalR to send messages between the website and hardware.

Technologies used:

.NET | ASP.NET MVC | SQL Server | TFS | Microsoft Test Manager | Microsoft Commerce Server | Windows Server 2008/2012 | Microsoft BizTalk

Freelance Software Engineer

Adept Web Studios

Jun 2009 - June 2011

- Re-wrote nopCommerce from WebForms to ASP.NET MVC. Contributed it back to nopCommerce for the V3+ release.
- Design and develop custom solutions from cms to e-commerce using the appropriate technologies.
- Created a Lucene.NET implementation for faceted searching in eCommerce solutions (nopCommerce).
- Wrote and sold plugins and themes for nopCommerce.
- Wrote a CMS integration for nopCommerce to bring advanced CMS technologies to an eCommerce driven website.

Software Developer

Dataline Associates

Sep 2009 - Aug 2011

- Managing catalog and orders (25,000 products) using MSMQ to handle product/inventory updates.
- Integration into 3rd party websites for price comparison and analytics.
- Managing web server (Windows Server 2008 R2) and database for high-uptime and high-load.

PROJECTS

Qml.Net github.com/qmlnet/qmlnet

An integration of .NET and QML for cross platform and high-performance desktop applications. I built a thin C layer with C++ shared pointers to integrate the two garbage collectors (.NET and QML-JavaScript). AppVeyor and Travis CI are configured to ensure a suite of tests pass for each commit on every major platform (Linux/OSX/Windows).

Technologies used:

C/C++ .NET Core QT Continuous Integration

Darch godarch.com

Think "Dockerfiles", but for immutable, stateless, graphical (or not) environments, booted bare-metal. I use this tool as my daily driver for Linux. Each distribution contains a custom initramfs that overlays a temporary file system over your read-only Darch images. This allows each boot to be a clean boot. Any change made to the runtime (`apt-get install`, etc) are discarded on each boot. Any change you want persisted has to be scripted and baked into your recipes (which is a good thing!).

Technologies used:

Go Docker containerd Continuous Integration

React ASP.NET Boilerplate github.com/pauldotknopf/react-aspnet-boilerplate

A boilerplate project used for a few personal projects of mine. It is a clone of the default ASP.NET template, written in React, that includes login (internal/external) and account management. There aren't many opinions and uses only well-established libraries and patterns. It also includes server-side rendering, allowing ASP.NET MVC controllers to provide the data needed to render each page on the server. After the initial render, client-side routing handles all future navigation. Since the server renders JavaScript, there is no need for Razor anywhere.

Technologies used:

React ASP.NET .NET Core Entity Framework Core gulp webpack redux Server-side rendering

EDUCATION

MCPD/MCTS .NET Web Developer

MCP ID: 8482776

Associates of Liberal Arts and Science

State College of Florida.

GPA 3.6 2008-2010