Dr. Christopher A. Tucker

ML-DevOps-CI/CD – Kube in Azure, AWS & OpenShift
C# dotnet sdk – Go/Forth/Scheme
Professional Cyberneticist: AI Systems Design & Development

Telegram: @cartheur
https://github.com/cartheur

Profile

Accomplished engineer, Linux specialist, AiOps, and Kubernetes implementations with extensive expertise in Azure, AWS, and OpenShift, specializing in containerized deployment strategies, infrastructure-as-code, docker, podman, distroless environments, and integrated deployments for large-scale and edge computing systems, consistently achieving zero-downtime operations. With a robust background as an embedded software engineer, I bring deep hardware knowledge and a proven ability to own end-to-end implementations. Proficient in legacy computing languages and techniques, I leverage a strong technical foundation to deliver innovative solutions for complex challenges in computing, data management, and deployment in the age of AI. As an experienced project lead, I have successfully guided cross-functional teams to meet strategic objectives, while mentoring junior engineers to foster skill development and drive team excellence in migration contexts. My comprehensive skill set, leadership acumen, and commitment to operational excellence position me as a valuable asset to technology-driven organizations seeking high-impact, reliable outcomes.

Languages: English (C2), Dutch (B1).

Motto: "*A good guy to have around when things get tough*."

Technical Skills

- **Programming Languages**: C#, Go, Erlang, Lua, Forth, Scheme, Ruby, Lisp
- **Operating Systems**: Linux (Debian), Windows, RTOS
- **Cloud Platforms & Services**:
    - Azure: Azure DevOps, MLOps, Azure Application Gateway, Azure Automation, Azure Data Factory, Azure Container Registry (ACR), Azure Kubernetes Service (AKS)
    - Infrastructure-as-Code: Terraform, Helm, Ansible (Playbooks), ELK
- **Containerization & Orchestration**: Docker, Kubernetes, Swarm, ArgoCD, IstIO
- **CI/CD & Build Tools**: Jenkins, GitHub Actions, GitLab, Bazel, Azure DevOps Pipelines
- **Version Control & Collaboration**: Git, SVN, BitBucket, Jira
- **Scripting & Automation**: Bash, PowerShell, Azure CLI
- **Monitoring, Observability & Event-Driven**: Prometheus, Grafana, Splunk, Kibana, Kafka
- **Configuration Management**: SaltStack, Ansible, Scheme
- **Development Environments**: Visual Studio, Visual Studio Code
- **Data & Analytics**: Jupyter Notebooks
- Role-Based Access Control (RBAC)
- Project management and team collaboration tools (Jira, Atlassian suite)

Skill Summary

Highly accomplished architect and engineer with extensive academic and professional experience, dedicated to designing and implementing optimized systems from development to production, prioritizing stability and efficiency. My approach integrates hands-on implementation with design, ensuring solutions align closely with customer needs and deliver tangible value. Beginning my career as a programmer, I maintain a deep understanding of developer requirements and employ collaborative, non-hierarchical guidance methods, fostering successful outcomes across numerous projects. As a seasoned engineer and traditional programmer, I emphasize technical rigor, leveraging first-principles thinking and team collaboration to define and solve complex challenges. My proven ability to balance strategic vision with practical execution positions me as a key contributor to delivering robust, high-quality products. One can clearly see the machine-intelligence evolution over the length of my professional career.

Experience

AI Systems Design Architect
January 2025 – Present
Cartheur Research, Noordwijkerhout, The Netherlands

Deep knowledge and experience in AI-based technologies, algorithms, and strategic initiatives. Highly-cognizant of current trends and methodologies that work, especially in empirically-based mathematical proofs.

- **AI & ML Development:** Building and training machine learning models for optimal use-cases.
- **LLM Integration:** Development and integration of LLM-powered features via APIs toward both internal tools and customer-facing products.
- **Automation:** Strong leveraging of Ideal AI to automate repetitive internal tasks, enhance support, and improve user experience.
- **Deployment:** Packaging and deployment of models into production using hard-spun and widely available open-source MLOps tools and cloud infrastructure – Azure, AWS, GCP, and OpenShift.
- **Collaboration:** Lectures and demonstrations within team settings and management stakeholders to identify and implement impactful AI opportunities.
- **Documentation & Maintenance:** Insurance of reproducibility, versioning, and continuous improvement of implemented AI models and pipelines.

The field of AI changes constantly, and consistent and dedicated improvement in knowledge and implementation is the expertise that I have brought to the businesses that I work with.

AKS Migration Engineer
June 2024 – November 2024
Cloudiction, Baarn, The Netherlands

IaC (Terraform, Bicep, ACR, AKS, VNET, RBAC), Azure Devops, GitLab; OPS for development teams transitioning from monolithic applications and outdated VM farm into Kubernetes in a universal manner, but in this case, Azure. Easy-to-use pipelines for devs to reduce stress on transitioning but a long process helping them change the mindset from monolithic to modular deployments.

- Project migration of VM-based application to containerization with 250k users.
- Automation demonstrating cost savings and reduction of maintenance expenses.
- Mentoring junior developers to monitor and add features according to customer's needs.

Technical Design Specialist
May 2022 – October 2023
Dienst Uitvoering Onderwijs, Groningen, The Netherlands

Technical specialist on the CD-Linux team for OpenShift and virtualization where designed highly-granular customizable application deployment environments such as distroless images using Bazel for customized layers via Gitlab,

Saltstack, Artifactory, Harbor, and Nexus. Contributor to the ambition of intelligent automated CD systems using artificial intelligence. Results were good in mapping cost in workloads verses business outputs but a notable savings of the hosting by reduction of container footprints using distroless. Kubernetes tailored implementation leveraging GitLab. A result summary is:

- Developed a novel and efficient developer-to-devops method that reduced costs significantly, accelerated developer work, simplified publishing code to the cluster, and reduced security risks making SecOps *very* happy.
- Redesigned and revamped, along with my team, CD1.0 to CD2.0 – from Jboss to OpenShift.
- Was awarded distinctions and recognition of efforts by the director of the organization.
- Implemented best-practices for automation and management of Kubernetes.
- Implemented self-healing infrastructure.
- Ansible, Bazel, C#, docker, Kubernetes, Saltstack, bazel, Prometheus, Kibana, Configuration Management, Network, DevOps, CI/CD, PowerShell, Jenkins

CI/CD - SRE in Azure DevOps / Product delivery specialist

August 2021 – May 2022
ASML, Eindhoven, The Netherlands

Hired due to my expertise in CI/CD, developer integration, and Azure architecture and deployment skillset. Duties consisted of planned automation, infrastructure-as-code, pipelines, environments, and Git repos to contain yaml files, Helm, and Terraform control planes and hosting natively in Azure, managed with Powershell; configured monitoring using Prometheus. Additional contribution was toward data engineering, due to my education: pyspark in Databricks for machine parsing of runtime files, including Azure DataFactory. I learned a niche technique at Reading where data can be precompiled and filtered that is analogous to the 2018 concept of "Attention is all you need" but in a more piecewise-linear execution. A result summary is:

- Improved system operating efficiency, by adding self-healing ideas to their machines.
- Solved inherent problems between machine monitoring and software mitigation techniques.
- Introduced new product streams.
- Educated junior data developers to the most efficient ML strategies.
- Bazel, Kubernetes, RestAPI, git workflow, PowerShell, Ansible, SaltStack, Machine Learning, Data Factory.

CI/CD - SRE in Azure, AWS DevOps / Technical Lead

November 2020 – July 2021
Worth Internet Systems, Rotterdam, The Netherlands

A problem with the nature of resource deployment into Azure Cloud via its DevOps platform prompted them to hire me to help out with several projects in the space of Dutch Ministries. Served as a sparring partner with an architect and project manager tasked to solve a long-running problem of the best approach to modernizing Dutch governmental institutional systems by bringing applications into the modern era with step-by-step procedures. Participated in "pitch sessions" with potential new customers. A result summary is:

- Solved the conundrum by my past experience with DevOps extensions and cataloging.
- Aided in properly configured Azure Gateway and Network Architecture.
- Enhanced my soft skills of talking about technical solutions to non-technical stakeholders.
- Kubernetes, docker, Prometheus, Bazel, Configuration Management, Saltstack, ITIL, Linux, Ansible.

CI/CD - SRE in Azure, AWS DevOps / Technical Lead

March 2020 – October 2020
Workstreampeople, Rotterdam, The Netherlands

Company is a workflow and infra-communications company that relies on an agent-like approach to customer service. My first task was to build a prototypical call-flow application that could run in a container called *asterisk*. Due to my experience in Azure, I also contributed to helping them bring their server-based applications to the Cloud. Azure did not fit their model in some cases so we did some pilots that could run in their servers in Kubernetes and did some

deployment work in Amazon Web Services. Some of the specific technologies utilized in this position was: docker, Kubernetes, asterisk, kamailio, ari.proxy, RBAC, and NATS. Final task was to help them derive a strategy that they could transition away from Jenkins CI/CD toward Gitlab. A result summary is:

- Built an independent module-based container of asterisk that would be deployed when required to pipeline call logic into their management framework.
- Contributed to workloads in AWS.
- Expanded by knowledge of proxy, RBAC, and NATS.
- RHEL, Linux, docker, Kubernetes, PowerShell, ITIL, make, asterisk, bazel, Lisp, Network storage, integration.

CI/CD – SRE as Azure Component Specialist / Cognitive Services Technical Lead

February 2019 – March 2020
Tata Steel, IJmuiden, The Netherlands

I was hired to help this industrial company transition their on-premises server-based workflow build systems to the Azure Cloud. The position began in an ad-hoc manner due to fickleness of the Azure architect but due to a lack of understanding in management across the departments that were participating, what was begin could not be undone. Therefore, my task was to find a method that would support on-boarding workloads into the new Cloud system. The solution was to create a DevOps Extension Marketplace consisting as a catalogue offering integrative resource deployments: DTAP environments, namespaces, data-containers (SQL and noSQL), service bus, and Cognitive Services, for Azure deployments utilized within the collective Tata Steel enterprise. A result summary is:

- Resolved a thorny problem as a result of poor practices but keeping the business operating.
- Introduced a novel method to deploy resources by the individual building their specific workload requirements.
- Expanded my knowledge of resources and their deployment paradigm in Azure.
- C#, Json, Kubernetes, PowerShell, ITIL, Network, Gateway, Performance Tuning, Configuration Management, Network storage, integration.

C# Senior Software Engineer / Azure Component Specialist / AWS Migration and Integration

June 2018 – January 2019
Bloemert, Stophorst, The Netherlands

A short-term consulting gig to apply my skills and past code deliveries to improve existing products and infrastructures. Main duties and responsibilities were to advise customers coming from legacy mainframes and networks into the design philosophy of Azure, DevOps, and Agile for best-practises and best results. Worked with NS on the data structure and API between their mobile ride app and the Azure backend. Designed a holistic medical application in C and Java that displayed the operations of a real-time magnetic-resonant scan as it moved through the body of the person receiving the therapy. Spoke about conundrums in software engineering, code size, and artificial intelligence at a sponsored conference in Amsterdam.

C++, C# Senior Software Engineer (Build & Maintenance) / MS Build Technical Lead

June 2015 – September 2017
Shell, The Hague, The Netherlands

I was tasked to help evolve the build and maintenance process and procedures of nine teams contributing code to several product-silos of volumetric oil-gas reservoir mapping software first composed in 1997, as the suite Petro-Signs/JewelSuite. Given the time invested quite a few parts were written in managed C++, some in pure C, and the higher-level abstractions in C#. Some of the technologies that were leveraged during the period were MSBuild, C++ code compilation (on-the-fly), and C# "glue" code to close the gaps between build and product-delivery pipelines all stored in Team Foundation Server. Two separate stints at Shell. A result summary is:

- Devised a compilation method that was triggered by a build pipeline.
- Improved quality by implementing primitive machine-learning algorithms in a build and maintenance context.
- Helped developers understand what goes on behind pushing the F5 button.
- C#, DevOps, Team Foundation, CI/CD, performance tuning, Network, gateway, integrations maintenance

Senior Software Engineer
January 2014 – September 2014
achelos, Paderborn, Germany

Senior C++ software developer and code mentor for a banking infrastructure and embedded development company. Development of Spring test frameworks for Java, testing strategies for C for SECCOS EMV for CPA and VCPS for payment infrastructures. Innovated new mathematical models of power transfer for RFID antenna and terminals.

Senior Software Engineer
July 2013 – December 2013
Verimatrix, Munich, Germany

Java EE developer and code mentor tasked with designing and implementing test harness framework in Ruby and Spring framework for a security services company (RSA, AES, TDES) for set-top boxes. Was involved in implementation of cryptography in C++.

Senior Software Engineer
May 2012 – May 2013
NXP Semiconductors, Graz, Austria

C/C# software engineer and test architect to validate the RFID product, MiFare EV1. Duties and responsibilities were writing software wrappers for infrastructure code, preparing test plans, writing user stories, writing tests from documentation, planning testing progress, performing integration and regression tests, and writing unit tests of additional features by the developers for an embedded environment. I authored test routines and planning for sequence flow of regression and functional tests by interfacing regularly with the architect. I wrote test-driven (TDD) and behaviour-driven (BDD) tests for impossible error and anti-tearing features for the ISO 14443 protocol, among other card interfaces in Calibri with the aim to deliver the highest possible quality of software given my abilities. I established a test harnesses in a remote networked environment used for nightly NATE builds. Performed automated testing and debugging of C/C++ code via GNU debugger and Eclipse in HAL, with an interface written in C#. Coached and mentored junior colleagues. Agile and Scrum shop.

Education

Ph.D. Cybernetics
University of Reading, UK 2008 - 2013

B.S. Mathematical Physics
University of Utah, USA 2001 – 2004