

# C. Carlo Fazioli

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I am an applied mathematician and software engineering generalist with experience in cloud computing, AI, and DevOps. I am a lifelong learner with far-ranging interests, confident in my ability to rapidly spin up in new environments, as well as deep-dive into the gritty details. In 2021, I made it onto the Advent Of Code global leaderboard!

## Current Position

2018 – Present **Software Engineer**, *Group W, Inc.*, Vienna VA.

Presently, Product Owner migrating a Kubernetes application from a privately controlled compute cluster to Microsoft Azure.

- Initially created and currently maintaining the DevOps pipeline:
  - Git branching strategy
  - Issue management
  - Azure infrastructure deployment
  - Source code and Docker image builds
  - Testing and QA
  - Application installation
  - Technical documentation
- Architected and currently maintaining the application's cloud infrastructure:
  - Virtual Networking
  - DNS Zones
  - Kubernetes Cluster
  - Docker Container Registry
  - Azure Active Directory
  - Security Principals
- Utilizing modern toolchain:
  - Git and GitLab CI/CD
  - Azure ARM Templates
  - Kubernetes and Helm
  - Let's Encrypt SSL Certificates

Previously, developer on a 2021 MORS Barchi-prize-winning, multi-year, multimillion-dollar DARPA contract to develop an AI wargaming application deployed to a 11-node, 1,240-CPU cluster.

- Architected microservices, their interfaces, and their implementations as Kubernetes objects
- Designed AI algorithms under senior mathematician's guidance, using reinforcement learning, feature engineering, TensorFlow neural networks, and Monte Carlo Tree Search
- Wrote application source code in python, including a REST API with Django, database interfaces with PyMongo, and custom libraries
- Acted as Agile Team Leader for a team of 10, managing GitLab issues, branching strategy, merging strategies and timelines, package releases, and CI/CD pipelines
- Administrated multiple MongoDB instances (each 10GB-1TB) from the mongo shell, and with PyMongo

## Education

2005 – 2009 **Ph.D. Mathematics**, *University of Illinois at Chicago*, Chicago IL.

2000 – 2004 **B.S. Mathematics**, *University of San Francisco*, San Francisco CA.

## Previous Positions

2016 – 2018 **Econometric Modeler**, *International Monetary Fund*, Washington DC.

Collaborated with IMF economists on global economic model development; researched, designed, and implemented algorithms for use by IMF staff; pursued exploratory research into technology solutions for IMF institutional needs; addressed technical needs of individual IMF staff.

2013 – 2016 **Assistant Teaching Professor**, *Dept. of Mathematics*, Drexel University, Philadelphia, PA.

Developed course and lab materials; lectured, graded exams, monitored students' use of online resources, assigned final grades; assisted students as needed outside of class or in office hours; directed teaching assistants.

2011 – 2013 **Postdoctoral Research Associate**, *Dept. of Mathematical Sciences*, New Jersey Inst. of Tech., Newark, NJ.

Researched, designed, and coded novel algorithms for use in fluid dynamics simulations; briefed research supervisor; presented findings to collaborators and conference attendees.

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## Hobbies and Interests

- Solving the NYT crossword puzzle daily
- Running, cycling, and yoga
- Cloud computing
- Science fiction lit/TV/movies
- Advent of Code and CTFs
- Bug bountying and cybersecurity
- MCU and embedded systems
- Quantum computing