Campus Connect

CSC478 – Deliverable 1

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Kadin Matotek

Contents

1 Introduction

Our team's vision for **Campus Connect** is to build an academic communication platform that blends the immediacy and ease of Discord with the structure and expectations of a university environment. Email is often too formal and too slow for day-to-day classroom collaboration; meanwhile, Discord tends to be adopted only in a handful of technical departments. *Campus Connect bridges this gap* by giving professors and students a dedicated space to create classrooms (analogous to servers), organize discussions into channels, share course files, and ask natural-language questions about class logistics and materials.

Beyond real-time chat, Campus Connect will centralize course resources (syllabi, assignments, notes) and provide an integrated retrieval-augmented model (RAG) so students can ask questions like, "When is assignment 2 due?" and receive accurate, context-aware answers drawn from classroom content. The goal is a single, user-friendly hub that makes communication faster, resources easier to find, and academic collaboration more effective.

2 Architecture

At a high level, users access the web frontend, traffic enters through a Kubernetes *Ingress Controller*, and the backend (NestJS) coordinates authentication, classroom logic, and communication with core data services. File storage, vector search for the RAG workflow, and real-time features are provided by dedicated services within the cluster. Figure 1 shows the overall system.

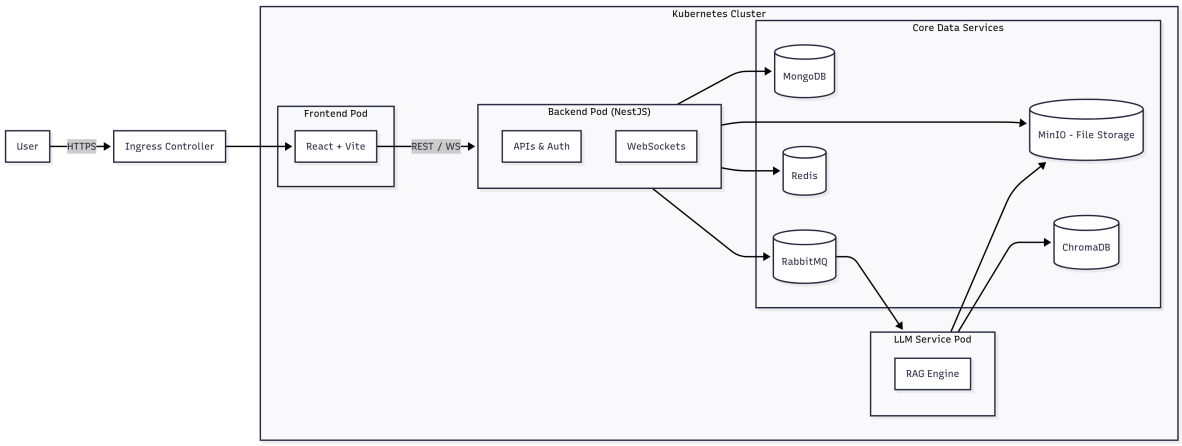

Figure 1: Campus Connect High-Level Architecture

Key Components

- **Ingress Controller**: Entry point routing requests into the cluster.
- **Frontend (React + Vite)**: UI for classrooms, channels, file uploads, and RAG queries.
- **Backend (NestJS)**: APIs, WebSockets, authentication, classroom/channel logic.
- **LLM Service**: RAG engine that indexes classroom files and answers natural language questions.
- **Core Data Services**: MongoDB (persistence), RabbitMQ (events), Redis (cache/WS), MinIO (object storage), ChromaDB (embeddings).

All components run in a Kubernetes cluster bootstrapped with `kubeadm` on one control-plane node and two workers.

3 Implementation Approach

Repository Structure

- **Infra/Cluster** — Terraform definitions, custom provider, Ansible bootstrap, Helm charts, Keel.
- **Backend** — NestJS service (APIs + WS) with MongoDB, Redis, RabbitMQ, MinIO.
- **Frontend** — React + Vite client for chat, file management, and RAG queries.
- **LLM Service** — Processes files into embeddings (ChromaDB) and answers queries.

CI/CD Overview

Each app repository builds container images and pushes them to GHCR on release tags. Keel, running in-cluster, automatically updates Deployments when new images are available. Infrastructure provisioning runs from GitHub Actions using Terraform (custom provider), followed by Ansible to bootstrap Kubernetes and Helm to deploy services. Figure 2 summarizes the pipeline, and Figure 3 shows the workflow trigger interface used in class.

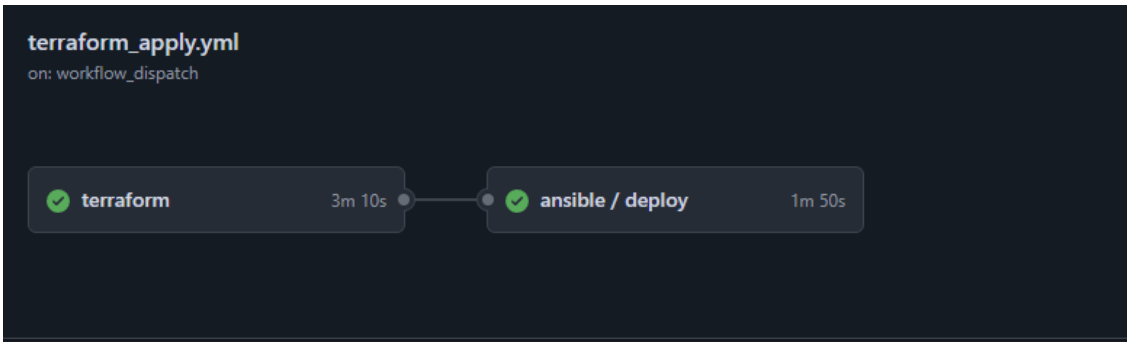

Figure 2: CI/CD Workflow (build images, publish to GHCR, provision with Terraform, bootstrap with Ansible, deploy with Helm).

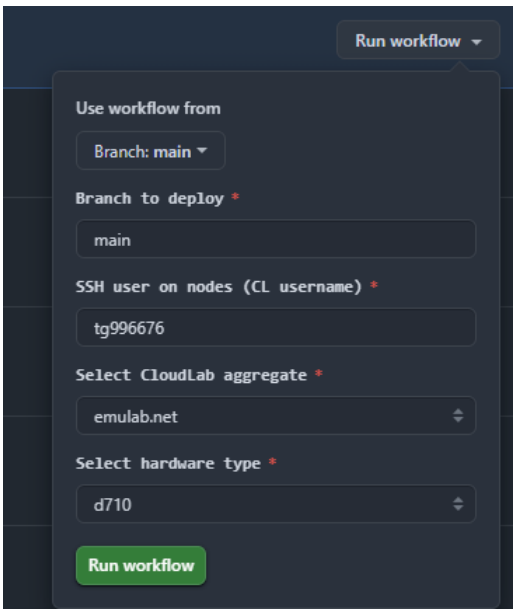

Figure 3: GitHub Actions workflow trigger (select branch, aggregate, hardware, SSH user; then run).

4 Infrastructure

Why Terraform?

CloudLab experiments are short-lived: nodes are reserved, configured, and eventually released. Recreating the cluster manually is tedious and easy to get wrong. Terraform lets us:

- **Declare** the topology (nodes, links, LANs, routable IPs) once,
- **Reproduce** it reliably in CI,
- **Share** the exact spec for grading and collaboration.

This mirrors how production teams manage infrastructure but adapted to an academic testbed.

Why our own Terraform provider

A community Go provider existed but talked to CloudLab via a separate Flask API running on localhost and focused mainly on VMs/VLANs. In CI, this meant two processes to manage and less flexibility for the experiments we wanted to describe.

We wrote a Go provider that talks to CloudLab's XML-RPC API *directly* and exposes the resource types we needed:

- Nodes: `rawpc` (bare metal), `xenvm` (VMs)
- Networking: `lan`, `link`, `bridged_link`
- Storage: `blockstore` attachments
- Rich outputs: experiment UUID, URL, expiry, and a per-node map (used by Ansible)

This keeps CI simple (one workflow) and lets us declare the same experiments we'd build in the CloudLab UI, but as versioned HCL.

Cluster layout (HCL)

Listing 1 shows the concise HCL we use most often (1 control plane + 2 workers on a shared LAN with routable IPs).

Listing 1: Terraform definition for Campus Connect cluster

```
resource "cloudlab_portal_experiment" "CC2-Cluster" {
  name            = "CampusConnect"
  wait_for_status = "ready"

  rawpc { name = "kubeadm", hardware_type = var.hardware_type,
          aggregate = local.aggregate_map[var.aggregate], routable_ip = true }

  rawpc { name = "worker1", hardware_type = var.hardware_type,
          aggregate = local.aggregate_map[var.aggregate], routable_ip = true }

  rawpc { name = "worker2", hardware_type = var.hardware_type,
          aggregate = local.aggregate_map[var.aggregate], routable_ip = true }

  lan {
    name = "lan0"
    interface { node = "kubeadm"  }
    interface { node = "worker1"  }
    interface { node = "worker2"  }
  }
}
```

Provider and code: Terraform Registry cc2-cluster GitHub

Provider internals (overview)

Internally, the provider registers a `cloudlab_portal_experiment` resource, validates the HCL (nodes, links, LANs, blockstores), and calls CloudLab's portal over XML-RPC. The provider returns outputs our pipeline needs (URL, node IPs, expiry).

Short excerpt:

Listing 2: Provider wiring (condensed)

```
func Provider() *schema.Provider {
  p := &schema.Provider{
    Schema: map[string]*schema.Schema{
      "project": {Type: schema.TypeString, Optional: true},
      "server":  {Type: schema.TypeString, Optional: true, Default: "boss.emulab.net"},
      "port":    {Type: schema.TypeInt,    Optional: true, Default: 3069},
      "path":    {Type: schema.TypeString, Optional: true, Default: "/usr/testbed"},
      "pem_path":{Type: schema.TypeString, Optional: true, Default: "~/cloudlab.pem"},
      "timeout": {Type: schema.TypeString, Optional: true, Default: "10m"},
    },
    ResourcesMap: map[string]*schema.Resource{
      "cloudlab_portal_experiment": experiment.Resource(),
    },
  }
  p.ConfigureContextFunc = func(ctx context.Context, d *schema.ResourceData) (interface{}, diag.
      Diagnostics) {
    // Build XML-RPC client with TLS and return a typed config used by resources.
    ...
  }
  return p
}
```

kubeadm bootstrap (Ansible)

After Terraform reports the experiment is `ready`, our workflow passes the node map to Ansible. The playbooks:

- install container runtime and `kubeadm`/`kubelet`,
- `kubeadm init` on the control plane and save the join token,
- `kubeadm join` both workers,
- install CNI (e.g., Calico) and core add-ons (NGINX Ingress, Metrics Server),
- configure MetalLB and ExternalDNS (below).

MetalLB and ExternalDNS (deep dive)

CloudLab doesn't provide a managed load balancer, so Services of type `LoadBalancer` won't receive external IPs by default. We use **MetalLB** in L2 mode and **ExternalDNS** with Cloudflare:

MetalLB (L2 mode).

- **Pool selection**. During deploy, Ansible detects the primary interface and node CIDR, then reserves a small, safe range at the tail of the subnet (e.g., `.200-.220`) for VIPs.
- **Assignment**. When a `Service: LoadBalancer` is created (e.g., NGINX Ingress), MetalLB allocates a VIP from the pool.
- **Advertisement**. Using ARP, MetalLB announces the VIP on the LAN so upstream hosts route traffic to the current node holding it.
- **Failover**. If that node fails, MetalLB remaps the VIP to another speaker; ARP updates propagate quickly.

- **Why L2 instead of BGP**. We don't control upstream routers in CloudLab, so L2 is the pragmatic choice on a shared LAN.

Minimal values we apply (excerpt):

Listing 3: MetalLB configuration (condensed)

```
apiVersion: metallb.io/v1beta1
kind: IPAddressPool
metadata: { name: default-pool, namespace: metallb-system }
spec: { addresses: ["10.10.1.200-10.10.1.220"] }
---
apiVersion: metallb.io/v1beta1
kind: L2Advertisement
metadata: { name: default, namespace: metallb-system }
spec: { ipAddressPools: ["default-pool"] }
```

ExternalDNS (Cloudflare).

- Watches the cluster for Ingress/Service changes.
- Creates/updates records under `campusconnectwcu.com`.
- We use TXT ownership (`txtOwnerId`) to avoid conflicts and `policy: sync` for idempotent updates.
- In Cloudflare, we set these LB records to *DNS only* for L4 traffic.

Minimal Helm values (excerpt):

Listing 4: ExternalDNS (Cloudflare) values (condensed)

```
sources: ["ingress","service"]
provider: cloudflare
cloudflare:
  apiToken: ${CLOUDFLARE_TOKEN}
domainFilters: ["campusconnectwcu.com"]
policy: sync
txtOwnerId: campusconnect
interval: 1m
```

Net effect: create an Ingress like `api.campusconnectwcu.com` → MetalLB assigns an IP → ExternalDNS publishes it. Nothing manual, even as experiments recycle.

Security and ops notes

- Secrets (CloudLab PEM, Ansible Vault password, Cloudflare API token) are stored in GitHub Actions secrets.
- The Terraform job outputs a JSON node map; the Ansible job consumes that only for the current run.

Figure 4 shows the final cluster view after bootstrap and add-ons.

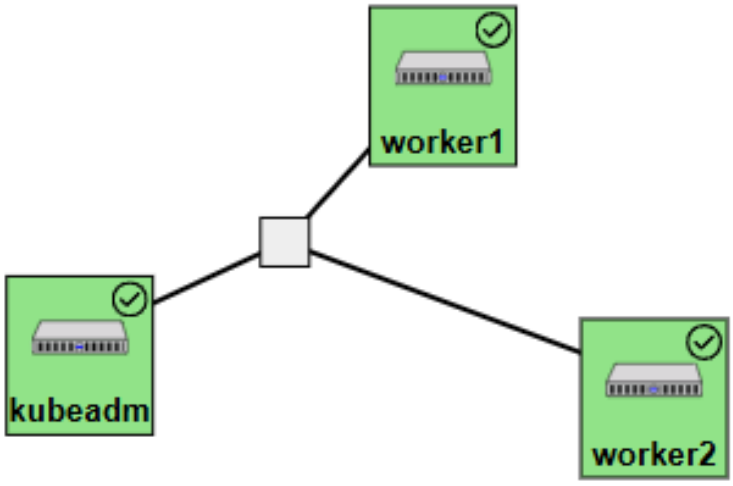

Figure 4: Campus Connect Cluster Infrastructure (post-bootstrap with Ingress, MetalLB, ExternalDNS).

EDWIN PRITOM BISWAS

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WEBSITES, PORTFOLIOS, PROFILES

- https://www.linkedin.com /in/edwi n-biswas-

PROFESSIONAL SUMMARY

Profile/Professional Summary: Diligent worker with eight years of experience in the fast-food industry, seeking new and exciting opportunities. Works well both in groups and independently.
Adaptive under pressure, good at problem-solving, and interested in learning new things.

WORK HISTORY

Crew Member/Store Manager, 02/2017 - Current
Dunkin Donuts, 2705 Edgemont Avenue, Brookhaven, PA 19015
Dunkin Donuts, 5101 Pennell Rd, Media, PA 19063

- Provided excellent customer service by greeting customers and meeting quality expectations.
- Took orders, prepared meals, and collected payments.
- Kept food preparation area, equipment, and utensils clean and sanitary.
- Worked front counter, drive-thru, and other areas.
- Assisted other team members in achieving goals.

SKILLS

- Proficient in Customer Service.
- Well-versed in Individual and Mass communication.
- Experienced in Information management and modern technology.
- Experience with Windows in File Management and Networking.
- Documentation using Adobe and Microsoft Word, Excel, and PowerPoint.
- Experienced in managing money as a manager during the pandemic of 2020 and at current times.
- Product Promotion
- Time Management
- Workplace Efficiency

EDUCATION

Bachelor of Science, Computer Science, Expected in 12/2025

West Chester University of Pennsylvania - 700 S High St, West Chester, PA 19383

GPA: 3.47

Associate degree, Computer Science, 12/2021

Delaware County Community College - Marple Campus 901 S. Media Line Road Media, PA 19063

GPA: 3.79

Alex M. Cooper Jr.

U.S. Citizen | cooperjralex@gmail.com | (717) 693-9424 | Github: https://github.com/AlexCooperJr

Education

West Chester University of Pennsylvania — **West Chester, Pennsylvania**
B.S. in Computer Science — Expected Graduation: Spring 2026

- **Related Coursework:** Computer Science III, Calculus, Discrete Mathematics, Statistics II, Data Structures and Algorithms, Computer Security, Computer Systems, Cloud Computing
- Placed second in the 2025 PACISE Cyber Security Competition
- Participated in the 7th and 10th Annual West Chester Programming Contest
- Spring 2024 Dean's List, Fall 2024 Dean's List, Spring 2025 Dean's List

STEM Work Experience

Booz Allen Hamilton — **Annapolis Junction, Maryland**
Software Engineering Intern (Data Science) — June 2025-August 2025

- Implemented an AI model to perform knowledge graph(KG) completion methods to output inferences about entities and their relationships from text data, alongside other metrics from the graph.
- Developed a user interface(UI) to streamline the implemented processes of KG construction, modification, visualization, and completion.
- Utilize containerization best practices to make a complete deployable product for cloud or other devices. Containized the backend separate from the front for utilization of the model without the established UI.
- Presented research and implemented results to a group of interns, full time employees, leadership, and executives on a national stage.

Statistics Tutor — **West Chester, Pennsylvania**
Peer Tutor — August 2024-Current

- Assisted students in either one on one or small group (less than 4) settings to work through topics from the Statistics I course at the West Chester University Learning Assistance and Resource Center (LARC)
- Covered topics including probability, confidence intervals, tests of hypothesis', and regression
- Reviewed material and developed individualized plans to ensure each student was able learn effectively and communicated between faculty, students, and peers to ensure continuity.
- Participated in training with the College Reading and Learning Association to be certified.

Projects

Embedded Retrieval Augmented Generation (RAG) System — **Lancaster, Pennsylvania**
August 2025

- Utilized an embedding model and vector database to handle the conversion of text data from different pipelines into vectors then storage for future retrieval

- Leveraged prompt engineering to create a prompt which allowed a Large Language Model to answer questions with a higher accuracy and more relevant information by retrieving relevant documents from the database.
- Developed a simple user interface to allow for a non command line way to prompt the LLM and receive answers

Thermostat Project **Lancaster, Pennsylvania**
July 2024

- Programmed an Arduino UNO to take in input from a thermistor and display the temperature onto an Liquid Crystal Display(LCD), change a Tri-color LED to a corresponding color based on range, and start a DC motor depending on the registered temperature.
- Utilized the Arduino IDE to write code for communication between the arduino and components.
- Designed the circuit and implemented the appropriate techniques and components to regulate current outputs for protection of all components.

Technical Skills

Languages: Python, Java, HTML, JavaScript, CSS, C, C++, Haskell, React
Libraries: Pandas, Numpy, Matplotlib, scikit-learn, Java.util, next.JS, node.JS, networkX
Environments/Tools: Thonny, BlockPy, jGRASP, Visual Studio Code, GitHub,Arduino IDE,CloudLab, Docker, fastAPI, wireshark

Non-Technical Work Experience

Valvoline Instant Oil Change **Lancaster, Pennsylvania**
Senior Technician May 2022-August 2024

- Supervised a team of employees to ensure speed of service, quality work, and safety.
- Interacted with suppliers to ensure supplies and resources were properly managed and available.
- Used a variety of new technologies, and industry standards to perform a number of roles during vehicle servicing.
- Kept track of and issued disciplinary files and ensured accountability for team members.

Resident Assistant Internship and Leadership Exploration(RAILE) **Newark, Delaware**
Intern/Mentee February 2023-May 2023

- Attended a variety of professional workshops that addressed issues commonly seen in work places and resident halls.
- Received on-site training and met with a mentor to build and develop characteristics of a leader.
- Helped coordinate and host events to engage with members of the community.

Tyler Geiger

West Chester, PA | tygg513@outlook.com | 267-500-7205 | linkedin.com/in/tyler-geiger

github.com/TylerGeiger513

Profile

Cloud-focused software engineer with experience deploying applications and infrastructure on AWS, Azure, and research-grade platforms. Skilled in Kubernetes, Terraform, and CI/CD automation, with a focus on building reproducible, scalable environments. Experienced in Agile teams, taking ownership of technical challenges, and contributing to both enterprise and academic projects.

Education

West Chester University of Pennsylvania, BS in Computer Science, Minor in Applied Statistics, Certificate in Cloud Engineering — Sept 2022 – May 2026

- GPA: 3.52/4.0
- **Deans List:** Spring 2024, Fall 2024, and Spring 2025
- **Relevant Coursework:** Cloud Computing I & II, Software Engineering, Operating Systems, Modern Web Applications, Data Communications & Networking, Database Management Systems, Computer Security & Ethics, Programming Languages & Paradigms, Data Structures & Algorithms, Experimental Design, Applied Statistics

Experience

Software Developer Intern, iPipeline – King of Prussia, PA — June 2025 – Aug 2025

- Migrated six carriers from Jenkins to GitHub Actions by upgrading frameworks, modernizing package references, and validating builds.
- Developed scripts to automate NuGet updates and accelerate local workspace setup and testing with parallelization.
- Transitioned multiple proprietary web services from TRX servers to AWS Lambda Functions and contributed to Terraform-based deployments for consistent Sandbox, QA, UAT, and Production environments.
- Worked within an Agile team, collaborating across roles to troubleshoot issues, implement requested features, and ensure reliable delivery for clients.

Copyright Office – Temporary Employee, ASTM International – Conshohocken, PA — Dec 2022 – Present

- Successfully registered over 5000 of ASTM's published literary works with the U.S Copyright Office through the ECO system.
- Developed an automation for the process above using Node.js, the XLSX library, and a Copyright Public Records API. This reduced a previously week-long, sometimes multi-week manual process into an automated process that can be configured and executed in a single day, significantly improving efficiency.
- Developed numerous ease-of-use automations and shortcuts utilizing Excel Office scripts and Windows PowerShell, significantly improving workflow efficiency, and simplifying tasks for my supervisor.

IT Operations – Temporary Employee, ASTM International – Conshohocken, PA — June 2023 – Aug 2023

- Populated the Application Portfolio Management (APM) system by conducting interviews with IT team members and documenting application dependencies, subject matter experts, and infrastructure components across DEV, QA, and Production environments.
- Standardized and organized metadata for dozens of enterprise applications to improve visibility, support planning, and enhance future maintenance efforts.

Projects

Campus Connect – Full-Stack Kubernetes Application on Research Cloud Infrastructure — `github.com/campusconnectwcu/cluster`

- Collaborated with a team to design and deploy a full-stack academic communication platform using NestJS and

MongoDB, containerized with Docker and orchestrated via Kubernetes and Helm.

- Configured a production-grade environment on the CloudLab research testbed, implementing DNS, SSL certificate management, and NGINX ingress routing for secure, scalable access.
- Automated image builds, designed repeatable infrastructure, and cluster deployments through GitHub Actions, Docker registry workflows, and Keel for continuous delivery and image version tracking.
- Engineered Helm charts, Kubernetes secrets management, and repository split strategies to optimize CI/CD pipelines and development workflows.
- Authored documentation to ensure reproducibility, scalability, and future academic research reference.
- **Tools Used:** NestJS, MongoDB, React, Redis, Docker, Kubernetes, Helm, Keel, GitHub Actions, Terraform, Skaffold, NGINX, CloudLab.

Portalctl – Go CLI for CloudLab/Emulab XML-RPC (WIP)

`github.com/CSC478-WCU/portalctl`

- Implemented a Go command-line utility to manage CloudLab experiments via Emulab XML-RPC, covering full lifecycle operations: `start`, `status`, `modify`, `terminate`, `extend`, `manifests`, `reboot`, `connect`, and `disconnect`.
- Added reproducible parameterization with `-bindings/-bindings-file` and repeatable `-param k=v` flags, plus JSON status output (`-j`) and configurable timeouts for CI usage.
- Built TLS client-auth support (PEM cert/key) and cross-platform builds; documented usage and examples for fast onboarding.
- Designed to pair with Terraform/CI pipelines for research testbed deployments (e.g., parameterized profile launches, profile modification, extends, node reboots).
- **Tools Used:** Go, XML-RPC, TLS/PEM, CloudLab/Emulab.

Web Development Volunteer, Chester County Association for the Blind and Visually Impaired (CCABVI) Sept 2024 – Dec 2024

- Collaborated wtih a team on a website accessibility enhancement project, implementing UI/UX improvements and features designed to meet ADA Section 508 compliance standards for blind and visually impaired users.
- Diagnosed and resolved technical issues, including a broken PayPal donation integration and misconfigured WordPress hosting setup.
- Took a leadership role in front-end development and coordinated team communication to ensure timely delivery of improvements.

Technologies

Languages: JavaScript/TypeScript, Go, Python, SQL, Bash, PowerShell

Cloud & Infrastructure: AWS (Lambda, ParamStore, CloudWatch), Azure (CLI, AKS, ACR), Kubernetes, Docker, Helm, Skaffold, NGINX, Keel, CloudLab/Emulab

DevOps & IaC: Terraform, Terragrunt, GitHub Actions, Octopus Deploy, CI/CD Pipelines, Secrets Management

Frameworks & Tools: .NET, NestJS, Node.js, Postman, Jest, MySQL, MongoDB, Git/Github

Specialties: Infrastructure-as-Code, Automation Scripting, API Development, Accessibility/ADA 508 Compliance, Cloud-Native Deployment Strategies

Kadin Matotek

302-723-2182 | kadinmatcs@gmail.com | linkedin.com/in/kadin-matotek | github.com/kmatotek

Education

Strath Haven High School Wallingford, PA

High School Diploma *Graduation: 5/2022*

- Clubs and Organizations: Ice Hockey, Track and Field, and Soccer.
- Relevant Coursework: Computer Science Principles

West Chester University of Pennsylvania West Chester, PA

B.S. in Computer Science, Minor in Mathematics *Expected Graduation: 5/2026*

- GPA: 3.94/4.0
- Clubs and Organizations: Upsilon Pi Epsilon, Omicron Delta Kappa, Club Ice Hockey
- Relevant Coursework: Artificial Intelligence, Data Structures & Algorithms, Operating Systems, Computer Security, Software Engineering, Cloud Computing, Applied Statistics, Linear Algebra, Discrete Mathematics, Multivariable Calculus

Projects

Email Classifier | *Java* Oct 2023

- Achieved 89% prediction accuracy in distinguishing legitimate emails from spam across a dataset of 5,000 emails by calculating distances between individual emails and clusters.
- Implemented Java GUI enabling users to assess email authenticity and calculate distances between individual emails and/or email groups.
- Integrated a range of classification techniques, including nearest neighbors and Euclidean distance calculations, to improve adaptability and strengthen analytical precision.

Happy Programming Language | *Java* Nov 2024

- Designed and developed "Happy", a custom programming language featuring support for variable assignments, conditional expressions, loops, functions, list operations, and string formatting, aimed at providing a clean and concise syntax compared to other common programming languages.
- Documented the development and syntax through knowledge base documentation, allowing for anyone to learn the syntax, built in functions, and everything needed to know to start developing with this language.

2D Unity Game | *C#, Unity* Oct 2023

- Developed a 2D video game inspired by *The World's Hardest Game*, incorporating challenging level design and precise player controls.
- Designed and implemented multiple levels with increasing difficulty to test players' reflexes and problem-solving skills.
- Conducted play-testing to refine game mechanics and enhance user experience based on feedback.

3D Unity Game | *C#, Unity* Nov 2023

- Developed a 3D game incorporating custom graphics, custom player scripts, and realistic physics simulations in outer space.
- Developed multiple levels, presenting players progressively challenging obstacles to overcome, ensuring continuous skill progression.
- Conducted user testing to get feedback and implemented improvements through updates.

Facial Recognition | *Python* Feb 2024

- Engineered a real-time face recognition program achieving over 90% accuracy on a structured dataset, providing efficient visual identification.
- Integrated advanced facial detection and recognition algorithms, utilizing libraries to detect and recognize faces in diverse environments.

Experience

Research Assistant Feb 2025 – Present
West Chester University of Pennsylvania *West Chester, PA*

- Awarded $2,500 research grant as the only Computer Science student accepted into SURI
- First author of an AI research paper submitted to CCSCE, rated highest among all conference submissions
- Built multi-model pipelines using Ollama and Hugging Face, leveraging reprompting and chain-of-thought techniques to enhance AI model performance
- Leveraged the ACCESS supercomputing center to run large-scale jobs efficiently, enabling rigorous testing of modern LLMs beyond typical hardware constraints
- Collaborated with Dr. Ngo on research initiatives aimed at evaluating AI model performance and optimizing testing methodologies

D.P. Dough West Chester Mar - Aug 2023
Delivery Driver *West Chester, PA*

- Executed over 1,000 customer deliveries with a strong focus on optimizing delivery routes, resolving logistical challenges, and ensuring timely, accurate order fulfillment through advanced problem-solving techniques.
- Utilized problem-solving skills to streamline order management processes and provide customer service.
- Took orders, served customers, addressed inquiries, resolved any issues to ensure the best customer experience.

Vicky's Place Jun - Jul 2021
Dish Washer *Swarthmore, PA*

- Assisted kitchen staff by ensuring a steady supply of clean cookware and dishware during peak hours.
- Maintained a fast-paced and organized dishwashing station to support smooth kitchen operations.
- Trained new employees on proper dishwashing procedures, safety protocols, and kitchen cleanliness standards to ensure consistency and efficiency.

Fort Delco Gym Jun - Jul 2020
Gym Custodian *Morton, PA*

- Maintained cleanliness and sanitation of workout areas, locker rooms, and equipment to ensure a safe and hygienic environment for both members and staff.
- Conducted routine inspections to identify and address maintenance or cleanliness issues promptly.
- Collaborated with staff to uphold gym standards and provide a positive experience for members.

Open Sky Energy Aug - Nov 2019
Social Media Manager *Swarthmore, PA*

- Collaborated with the team to develop marketing strategies and improve social media outreach.
- Developed and scheduled posts to promote solar energy solutions, company updates, and customer success stories.
- Managed and created content for the company's social media platforms, increasing engagement and brand visibility.

Volunteering

Media Food Bank Mar - Aug 2023
Volunteer *Media, PA*

- Assisted customers by taking food orders and providing a welcoming, supportive environment.
- Retrieved and organized food items based on customer orders to ensure accuracy and efficiency.
- Worked collaboratively with volunteers and staff to maintain smooth food distribution operations.

Publications

K. Matotek, H. Cassel, M. Amiruzzaman, L. B. Ngo. *Evaluating the Limitations of Local LLMs in Solving Complex Programming Challenges.* arXiv preprint, 2025. arxiv.org/abs/2509.15283

Technical Skills

Proficient Languages: Java, Python
Familiar Languages: JavaScript, C#, R, SQL, Haskell, LaTeX, HTML, CSS
Developer Tools: Docker, Git, Linux, Zsh, Redis, MongoDB, Spring Boot, Unity, Ollama, Hugging Face