

## Joana Konadu Owusu

Cell: +1 307 761 3714 | Email: jowusu1@uwyo.edu | Website: <https://joan947.github.io> |

LinkedIn: <https://www.linkedin.com/in/joana-konadu-owusu-8b735b182/> | GitHub: <https://github.com/joan947> |

Location: Laramie, Wyoming

### Objective/ Summary

I am a mission driven MSc. Computer Science student supervised by Dr. Shivanand Venkanna Sheshappanavar. My research entails LLM and VLMs for Assistive Technologies, Health and Transportation. I am proficient in Machine Learning and Software Development technologies, and I am seeking to launch my career as Research Scientist where I can contribute to meaningful projects and apply my expertise to develop impactful solutions.

### Education

#### **Master of Science (MSc) –Computer Science**

University of Wyoming

Aug 2024 – May 2026 (Exp. Graduation date)

GPA: 4.0

#### **Bachelor of Science (BSc) –Computer Science & Engineering**

University of Mines & Technology

Sep 2016 – Aug 2020

CGPA: 3.61

### Research Projects

#### **SAM3Count for Zero-Shot Open Vocabulary Counting in Images and Videos (Lead)** Feb 2026 – Mar 2026

- Built zero-shot counting model targeting counting failures caused by dense scenes in images and videos
- Designed an ROI and adaptive tiling preprocessor to improve counting performance
- Achieved SOTA results across image and video benchmarks tested (over 13% decrease in MAE for FSCD147 test set).
- Accepted for Oral presentation at CVPR Workshop 2026.

#### **OVAC: Open-Vocabulary Adaptive Counting in Images & Videos (Lead)**

Oct 2025 – Jan 2026

- Built zero-shot counting model targeting counting failures caused by ID switches, fragmentation, and occlusion
- Designed an identity layer over SAM3 to maintain consistent identities and prevent double counting risks
- Achieved SOTA results across video benchmarks tested (over 3% increase in accuracy and lower MAE).

#### **Smart Glasses for the Visually Impaired (Lead)**

Jan 2025 – Sep 2025

- Engineered an AI-powered smart glasses device, built on a Raspberry Pi, to assist visually impaired in scene analysis and object identification
- Built a cross-platform mobile application to serve as the primary user interface and communication hub to
- Developed a computer vision and LLM model to process sensory data and provide descriptive feedback to the user.

#### **GPT2 from Scratch (Lead)**

Sep 2025 – Nov 2026

- Built an end-to-end GPT model with tokenization, attention, chain of thought reasoning and RAG techniques.
- Pretrained on unlabeled data and fine-tuned to follow instructions on instruction–response pairs with logged training loss and accuracy and generation behavior across temperatures.

#### **XPT: Enhanced Point Transformer V3 (Lead)**

Jan 2025 – May 2025

- I re-engineered the Point Transformer model used for 3D point cloud understanding to improve its training and inference accuracy (0.5% to 1.5% across Scannet and S3DIS datasets) and speed (40% decrease in speed) showcasing ability to optimize large ML models for production environments.

#### **Estimating Optimal Path Route Finding for Emergency Response (Contributor)**

Oct 2024 – Dec 2024

- Applied AI search algorithms (A\*, Dijkstra, Bidirectional Search) to design a decision system for emergency route optimization.
- Developed a risk factor model integrated into heuristic functions and implemented route visualization using NetworkX, demonstrating strong algorithmic and data-driven problem-solving skills.
- Worked on visualizing the determined path on the map using NetworkX framework.

## Work Experience

### **Graduate Research Assistant**

Aug 2024 – Present

University of Wyoming | WY, USA

**Supervisor:** Dr. Shivanand Venkanna Sheshappanavar

- Improve and develop VLM (Image, Video and 3D) and LLM models for assistive technologies, healthcare and autonomous driving.
- Work with HPC clusters to incorporate techniques that optimize and enhance efficiency of models and design hardware wearable IoT devices for persons with disabilities
- Assist the REU NSF funded summer program for mentoring undergraduate students to guide them in their research journey.

### **Information Technology Coordinator**

Nov 2021 – July 2024

Ghana Education Service | Kumasi, Ghana

- Administered and maintained the school's database systems and networks while maximizing the information technology tools and systems' efficiency and effectiveness
- Performed Network and System administration tasks on Windows Server and SAP software.
- Reviewed schools' system and network performance to make proactive adjustments based on established IT policies.

### **Software Developer Intern**

June 2018 – Aug 2018

Mobile Web Ghana | Accra, Ghana

- Contributed to a fast-paced startup environment, collaborating with senior engineers in an Agile team to build customized software products using WordPress, Django, React, Node JS and MySQL frameworks.
- Trained beginners (teens to middle aged) in website development using WordPress, Google Sites, HTML, CSS and JavaScript.

## Publications

Joana Konadu Owusu, Shivanand Venkanna Sheshappanavar, "OVAC: Open Vocabulary Adaptive Counting in Images and Videos", **Under review for** International Conference for Pattern Recognition (ICPR) 2026. [\[PDF\]](#)

Joana Konadu Owusu, Shivanand Venkanna Sheshappanavar, "SAM3Count for Zero-Shot Open Vocabulary Counting in Images and Videos", (Oral), Computer Vision and Pattern Recognition Workshop Proceedings (CVPR) 2026. [\[PDF\]](#)

## Skills & Certifications

**Technical Languages:** Python, SQL, Java, JavaScript.

**Operating Systems:** Windows, Linux, Mac OS.

**Certifications:** LinkedIn Full Stack Software Developer, Microsoft Azure Fundamentals, IBM Enterprise Design Thinking Practitioner

**Tools:** GitHub, HPC, SLURM, Jupyter Notebook, Pytorch, CUDA, RAG, Node JS, React, MySQL, MongoDB, Microsoft Azure, AWS (SageMaker, Snow Flake, S3, IAM, CloudWatch, EC2, Lambda), ML Ops, CI/CD, REST API, Raspberry PI

**Soft Skills:** Mission-Driven, Collaborative, Strong Communicator, Eager to Learn, Passion for Growth.

## Extracurricular & Leadership Activities

### **Volunteer Software Development Specialist**

### **Inclusive Tech Group**

Nov 2020 – to date

- Member of the core team that plans, host and organize events, training sessions, conferences, fairs and hackathons to advocate for Disability Inclusion in the technology space.
- Collaborate with members of the product development team to develop assistive technologies for persons with disabilities including mobile apps, web platforms and hardware IoT devices.

### **Volunteer Student AI Expert**

### **University of Wyoming**

Nov 2025 – to date

Member of the student committee under the University AI committee, that provide recommendations and guidelines for responsible and ethical use of AI in the classroom and research.