# Kyle Buettner

Pittsburgh, PA, USA | *Email:* buettnerkr@gmail.com | *LinkedIn:* [kyle-robert-buettner](#) | *GitHub:* [krbuettner](#) |
*Website:* [https://krbuettner.github.io/](#) | [Google Scholar](#) (8 publications, 55 citations as of 12/4/24)

## PROFILE

- Ph.D. candidate in Intelligent Systems seeking full-time AI/data analytics/machine learning position; can start Spring 2025
- Proven research record in computer vision/natural language processing, publishing at top venues (CVPR, EMNLP, WACV)
- **AI Expertise:** Vision-language and multimodal modeling, ML robustness, object recognition/detection/segmentation

## EDUCATION

**University of Pittsburgh – Pittsburgh, PA, USA**
Doctor of Philosophy, Intelligent Systems (GPA: 3.99/4.00)                    *Sep 2021 – Aug 2025 (Expected)*
Master of Science, Electrical and Computer Engineering                        *Sep 2019 – Apr 2021*
Bachelor of Science, Computer Engineering (GPA: 3.94/4.00)                    *Sep 2015 – Apr 2019*

## INDUSTRY EXPERIENCE

**Amazon – Seattle, WA, USA**
*Applied Science Intern*                                                      *June 2024 – Aug 2024*
- Improved precision (>5%) and coverage (>40%) of million-scale classification with design of vision-language system
- Devised, proposed, and executed research plan while communicating process to multiple levels of company leadership
- Constructed datasets through querying and manipulating large databases with billions of entries using cloud tools and Spark

**GatherAI – Pittsburgh, PA, USA**
*Machine Learning Intern*                                       *May 2021 – Aug 2021; May 2022 – Aug 2022*
- Enhanced company's drone-derived insight offerings through R&D on new vision pipeline (+20% accuracy inc. for beta)
- Devised an image filtering pipeline that resulted in >3x reduction in error for customer-facing inventory analytics
- Orchestrated full model lifecycles, with frequent error analysis and manual annotation for detection/segmentation

**UPMC Enterprises – Pittsburgh, PA, USA**
*Software Engineering Intern on the NLP Team*                                 *June 2018 – Aug 2018*
- Engineered visualization tool for EHR domain ontologies (process time for knowledge dept. moved from hours to minutes)

## RESEARCH EXPERIENCE

**University of Pittsburgh – Pittsburgh, PA, USA**
*Ph.D. Graduate Student Researcher, Intelligent Systems*                      *Sep 2021 – Present*
- **Dissertation:** "Adapting the object understanding capabilities of VL models for improved usability around the world"
- **Notable Projects:** Improving object detection through contrastive learning, enhancing use of attribute context in vision-language models, modeling climax of video ads, extending VLMs to cross-geography and multilingual settings
- **Accomplishments:** 1st author in CVPR24, EMNLP24, WACV24, AAAI23 PracticalDL workshop; 2nd author in BMVC18
- Gained significant expertise in training and prompting vision-language and large-language models (e.g. CLIP, GPT, LLaMA)

*M.S. Graduate Student Researcher, Electrical & Computer Engineering*         *Sep 2019 – Apr 2021*
- **Thesis:** "A Case Study in Practical Neuromorphic Computing: Heartbeat Classification on the Loihi Neuromorphic Processor"

## SKILLS

- **Areas:** Artificial Intelligence, Computer Vision, Natural Language Processing, Machine Learning, Deep Learning, Neural Networks, Statistics, Data Analytics, Databases, Vision-Language Models (VLMs), Large Language Models (LLMs), Software Development, High-Performance Computing, Machine Translation, Prompt Engineering, GenAI
- **Programming:** Python, R, SQL, C++, C, Java, MATLAB, Spark, CUDA, OpenCL, OpenMP, MPI, VHDL, Linux
- **Machine Learning Libraries/Tools:** PyTorch, TensorFlow, OpenCV, SciKit-Learn, SpaCy, NLTK, HuggingFace, Pandas, NumPy, Matplotlib, Fairseq, Whoosh, Nengo, Detectron2, MMDetection, NetworkX
- **Software Engineering:** Git, Jupyter Notebook, Agile, Scrum
- **Cloud:** Amazon EMR, AWS, Google Translation API, SageMaker, S3

## PROJECTS

- **[COVID-19 Search Engine Prototype](#)** - designed engine with query likelihood/Boolean models, Tkinter UI, Whoosh indexing
- **[Paint-By-Numbers Canvas Generator](#)** - engineered vision pipeline with OpenCV; GPU-accelerated w/ PyCUDA (2.6x)