

DEPARTMENT OF BIOMEDICAL ENGINEERING
COLLEGE OF ENGINEERING & APPLIED SCIENCE

RESEARCH OPPORTUNITIES FOR UNDERGRADUATE students

APPLICATION DEADLINE: April 3, 2026

PROJECT TITLE: Automated Report Generation for PET/CT Imaging Using Large Language Models

Physical Requirement :

The co-op student must possess adequate visual acuity to accurately review PET/CT images on a computer screen.

Project's Technical Skills Requirement :

Programming experience in Python; Familiarity with deep learning frameworks like PyTorch or TensorFlow; Comfortable working in Linux environments and using command-line tools.

Project's Available Positions : 2

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Project Description

Biomedical imaging is rapidly transforming both engineering and medicine, and the Emission Tomography Imaging Laboratory at the University of Cincinnati is at the forefront of this innovation. Our lab focuses on developing cutting-edge imaging techniques to improve the quantitative measurement of physiological and biochemical processes in humans and animals. Ultimately, our goal is to generate meaningful evidence that helps understand and treat human diseases.

One of our key research areas focuses on hybrid PET/CT imaging, a powerful modality widely used in oncology, cardiology, and neurology. Despite its clinical value, post-imaging report generation remains a time-intensive process, contributing to increased workload, delays in care, and variability in reporting.

With recent advances in large language models (LLMs), this project explores their potential to automate the generation of clinical reports from PET/CT images—helping address the growing demand for imaging services and the global shortage of radiologists. By leveraging multimodal LLMs capable of processing both images and text, the project aims to develop end-to-end AI systems that convert imaging findings into structured draft reports. These systems are

designed to function as AI-assisted tools that enhance efficiency while supporting—rather than replacing—clinical decision-making.

As a Co-op student, you'll collaborate with researchers in our lab and clinicians at Cincinnati Children's Hospital to develop and refine these AI-based methods. You'll also help evaluate their performance on pediatric patient data, contributing to both scientific publications and potential clinical applications.

We are seeking a motivated undergraduate with:

- Programming experience in Python
- Familiarity with deep learning frameworks such as PyTorch or TensorFlow
- Comfortable working in Linux environments and using command-line tools

This is a unique opportunity to gain hands-on experience in biomedical research, work with real clinical data, and contribute to impactful innovations in healthcare.