

UVA Recreation x ML@UVA

Facility Analytics & Capacity Intelligence

Summary

UVA Recreation needs data-driven systems to optimize operations and support strategic planning. We're recruiting for two distinct roles that will ultimately integrate into one comprehensive platform:

Role 1: Computer Vision and Capacity Monitoring

Build and deploy a CV-based real-time occupancy tracking system using overhead cameras to provide accurate facility capacity counts.

Objectives

1. Improve object detection/tracking algorithms for school facility environments
2. Support camera installation and edge computing hardware setup
3. Optimize counting accuracy across different gym zones and lighting conditions
4. Provide real-time occupancy data stream for data analytics integration

Required Skills: Computer Vision (OpenCV, YOLO, etc.), Python, hardware (cameras/Raspberry Pi), teamwork

Preferred Skills: Edge computing, model optimization, experience with real-time systems

Role 2: Usage Analytics, Forecasting, & Dashboards

Analyze facility usage and demographics using historical data and real-time capacity feeds to support strategic decisions and operational planning.

Objectives

1. Integrate and clean data from multiple sources for analysis of usage patterns across student populations, affiliations, time periods, and other variables
2. Build real-time predictive models for capacity forecasting and demand planning
3. Create interactive PowerBI dashboards for leadership and operational staff

Required Skills: Python, SQL, PowerBI, data cleaning/wrangling, independent work ethic

Preferred Skills: Azure, time-series forecasting, statistical analysis

Project Timelines: Long-term (2+ semesters), ~5 hours a week

Interested? Email auj7tx@virginia.edu with preferred role (or both), relevant experience, and availability. Primarily, we are seeking data analysts, then CV, ML, and SWE engineers.