# Smart Campus Competition

# Year: 2024-2025 University: Rutgers University

## Winning Team: Scarlet Impact

This project, UniView, presents an IoT-powered occupancy sensor system designed to provide real-time data for infrastructure capacity insights. It utilizes Verizon's 5G network to enhance mobility and efficiency, helping users make informed travel decisions based on current occupancy levels.

**Key features and functionalities include:**

* **Real-time Occupancy Tracking:** Solar-powered cameras with fisheye lenses and AI-based image processing detect occupancy.
* **Parking Availability & Optimization:** In-app features like interactive maps with color-coded sections, real-time updates, and push notifications assist with parking.
* **Crowd Density Insights & Event Management:** Provides data for better management of crowds and events.
* **Data-Driven Campus Planning:** Offers insights for optimized campus planning.
* **5G Low-Latency Connectivity:** Leverages Verizon's 5G Ultra Wideband with MEC for real-time data transmission.
* **Edge Computing & AI Processing:** On-device AI filters and encrypts data before sending it to the cloud, reducing bandwidth and improving speed.
* **Cloud Infrastructure:** Uses AWS EC2, S3, and Lambda for scalable storage and real-time data processing.
* **Smart Data Delivery & Analytics:** Users access insights via the UniView app with AI-driven analytics.

**Target Audience:** Rutgers Students, Rutgers Faculty, and Visitors.

**Feasibility and Restrictions:** The system complies with privacy laws (New Jersey Identity Theft Prevention Act & New Jersey Data Privacy Act) through encryption, anonymization, and timely data deletion. It supports continuous data collection with minimal upkeep and avoids large investments in physical infrastructure by optimizing cloud use.

**Market Size (Rutgers University example):** A campus population of 67,000 students and 13,000 faculty, with over 30,000 parking spaces, presents a high-density market for smart parking solutions.

**Impact:**

* **Rutgers Impact:** Reduces traffic congestion, improves visitor and commuter experience, enhances campus safety, supports sustainability, and transforms Rutgers into a "Smart Campus."
* **Verizon Impact:** Creates a self-sustaining and scalable revenue stream, enhances brand awareness, allows for university partnerships, helps win market share among younger generations, increases 5G use, and facilitates future integration of additional Verizon offerings.