

Site Selection Analysis

6. The university plans to build two electric scooter charging stations on its campus. Please provide site selection suggestions based on the overall campus spatial layout. (WHU)

Answer:

Based on the geographic spatial data you provided for Wuhan University Information Science Campus, we conducted a clustering-based analysis of the functional zones on campus (teaching areas, residential areas, and service areas). To maximize coverage efficiency and meet charging demands under different usage scenarios, it is recommended that the two charging stations be located in the “central core living & research area” and the “western software institute & high-density dormitory area.” These two sites form an “east – west dual-core” configuration, effectively covering the campus’ s primary pedestrian and mobility hotspots.

Recommended Charging Station Layout Plan

| Station ID | Recommended Area | Core Role | Primary Users Covered | Nearby Roads |
|------------|--|-----------------------------|---|----------------------------|
| Station A | Central area: near Student Dormitory No. 2 / Surveying & Remote Sensing Laboratories | Core hub station | Faculty and students from the Surveying & Remote Sensing Schools; residents of central dormitory clusters | Xinghu Road |
| Station B | Western area: near C7 Dormitory / Aerospace Research Institute | Residential support station | Faculty and students from the School of Software Engineering; residents of western dormitory clusters | Internal residential roads |

Detailed Site Selection Analysis

1. Station A: Central Core Living & Research Area

- Recommended coordinates: approximately [114.3552, 30.5302]
- Rationale:
 - High-density mixed demand: This area functions as the “heart” of the campus. It is adjacent to the National Key Laboratory of Surveying and Remote Sensing and the Information Science Campus Library, where academic activities are frequent and daytime commuting-related charging demand is high.
 - Concentrated residential zones: Surrounding student dormitories (Dormitories No. 2, 3, and 4) generate strong nighttime parking and charging demand.
 - Commercial and service facilities: Nearby facilities include the Information Science Campus CBD and the Senior Activity Center, resulting in high pedestrian flow and convenient vehicle access and parking.
- Deployment suggestion: It is recommended to repurpose available open space along Xinghu Road or existing bicycle parking areas near Student Dormitory No. 2.

2. Station B: Western Software Institute & Dormitory Cluster Area

- Recommended coordinates: approximately [114.3520, 30.5298]
- Rationale:
 - Independent residential cluster: Located in the western part of the campus, this area

contains dense dormitory groups, including C7 Dormitory, Student Dormitories Buildings 11 and 12, and Information Science Campus Dormitory No. 20. These residences are relatively distant from the central core area, and a dedicated station would prevent long-distance scooter pushing.

- Specialized research and teaching flow: The site is close to Software Engineering Building B4, the Wuhan University Aerospace Research Institute, and the National Cybersecurity Institute, where faculty and students frequently travel short distances between laboratories and dormitories.
- Deployment suggestion: It is recommended to place the station in the open area between C7 Dormitory and the Aerospace Research Institute, or to utilize available space near Information Science Campus Canteen No. 4, enabling convenient charging during meals and overnight charging upon returning to dormitories.

Integrated Spatial Coverage Logic

With this two-station configuration, the following coverage network is achieved:

- Station A primarily absorbs and serves the high volume of electric scooters from the central and eastern campus areas, including the Surveying School, Remote Sensing School, and major undergraduate dormitory zones.
- Station B focuses on serving the relatively independent western cluster, including the Software Engineering School, Cybersecurity Institute, and graduate residential areas, effectively filling a service gap in the western campus.

This plan accommodates the dual temporal demand pattern of “daytime fast charging in teaching areas” and “nighttime slow charging in residential areas.”

7. I want to plan two bus tops , focusing on convenience for students and faculty commuting between dormitories and teaching buildings. (WHU)

Answer:

I'll help you plan optimal bus stop locations by analyzing the spatial distribution of dormitories and academic buildings. I recommend two bus stop locations:

Station A: Academic Core Hub (Academic Hub)

Proposed coordinates: 114.3557, 30.5288

Site Details and Advantage Analysis:

- Located at the geometric center of the teaching building cluster: This coordinate is precisely situated in the area of Information Science Building No. 1. Taking this point as the center, it is closely surrounded by teaching Building No. 2 and No. 3.
- Near core research and learning facilities: The site is not only close to the State Key Laboratory of Surveying and Mapping and Remote Sensing, but also provides convenient access to the Wuhan University Library (Information Branch) to the north.
- Serving part of the central dormitory area: Nearby student residences such as Information Science Dormitory Buildings 7 and 9 are also located around the site, allowing students in this area to quickly travel to other campuses or the northern part of the campus.
- Convenient road access: The site is close to the intersection of Beijing Road and Shaanxi Road, where road conditions are well developed, facilitating bus stopping, boarding, and passenger

distribution.

Station B: Northern Residential Hub (Residential Hub)

Proposed coordinates: 114.3535, 30.5334

Site Details and Advantage Analysis:

- Serving high-density northern dormitory clusters: This coordinate lies within the core residential area of the northern campus, surrounded by a dense distribution of dormitory buildings, including Buildings 20, 19, 27, 29, and 26.
- Adjacent to daily-life service facilities: The site is close to commercial amenities such as the Luoli Convenience Store and parcel service points, and is also near the Xinghu Garden Faculty Canteen and Xinghu Garden Guesthouse.
- Convenient access to cultural and recreational activities: To the south, this area connects to Xingkong Square and the Senior Activity Center, serving not only students but also faculty members and their families in daily travel.
- Road network accessibility: The site falls within the road network influence area of Qiushi Avenue and Yulan Road, enabling flexible loop or turnaround operations for buses within the northern residential zone.

Overall Planning Supplementary Notes

- Route connectivity: Station A and Station B are connected via campus arterial roads (such as Qiushi Avenue or Xinghu Road), forming an efficient north–south commuting corridor across the campus.
- Reasonable spacing: The area between the two stations includes major non-teaching zones, resulting in an appropriate distance. Introducing shuttle bus services would save approximately 10–15 minutes of walking time.

8. I'm thinking of opening a coffee shop on campus, but I'm not familiar with the campus environment. Could you recommend a location for me based on the campus layout, foot traffic, competitors, and other factors? (WHU)

Answer:

Based on the geographic data that you provided, an in-depth site selection analysis is conducted as follows.

1. Current Situation Analysis

First, the data clearly indicate that there is already a highly concentrated competitor cluster located in the central–western part of the campus (around coordinates 114.354, 30.530). This area hosts multiple major brands, including Luckin Coffee, Chayan Yuese, Guming, and CHAGEE (Bawang Chaji). It is located adjacent to Canteen No. 1 and Student Dormitories Buildings 3, 4, 5, and 6. If you are a new entrant, it is recommended to avoid this area.

2. Recommended Site Selection Options

Option A: Core Teaching Building Area (Southern Zone)

Recommended location:

Near Information Science Buildings No. 1 and No. 2, or near the School of Geomatics (Building No. 4). Approximately 114.356, 30.528.

Target user analysis:

- High-density teaching resources: This area concentrates Teaching Buildings No. 1 and No. 2, Building No. 3 (Department of Printing and Packaging), Building No. 4 (School of Geomatics), and Building No. 5 (School of Remote Sensing and Information Engineering).
- Pain point: This area is approximately 200–300 meters away from the central coffee cluster. Although the distance is not large, for faculty and students with only 10–15 minutes between classes, the round-trip time cost for purchasing coffee is too high.
- Operational suggestion: This location is suitable for a shop focusing on coffee (for alertness) and light meals, emphasizing “early-morning class coffee” and “between-class refueling.”

Option B: Western Residential & Research Area

Recommended location:

Near the Information Science Campus Cultural & Sports Center, or near Student Dormitories Buildings 15 and 16. Approximately 114.351, 30.530.

Target user analysis:

- Dormitory clusters: This area includes Student Dormitories Buildings 15 and 16, Dormitory No. 20, and Software Engineering C3 Dormitory.
- Research and sports facilities: Adjacent to the Wuhan University National Cybersecurity Institute, the Laboratory for Earth Space Environment and Geodesy, and the Information Science Campus Cultural & Sports Center.
- Competitive vacuum: This area is relatively far from central competitors such as Luckin Coffee and is close to Information Science Campus Canteen No. 4.
- Operational suggestion: This location is suitable for offering delivery services (covering all western dormitories) and comfortable indoor seating, providing a space for researchers and students to hold discussions or rest after exercise.

9. I'm thinking of choosing a vacant lot on campus to build an on-campus shopping mall. Do you have any suggestions? (SZU)

Answer:

Based on the geographic data, building a campus shopping mall requires balancing student foot traffic, available land size, and accessibility. I have identified three potential locations for a shopping mall, ranging from a central commercial hub to a cultural plaza.

Recommendation 1: The Central "Life & Learning" Hub (Top Pick)

This is the most strategic location. It sits directly between the main dormitory cluster and the primary academic buildings, ensuring constant foot traffic throughout the day.

- Location: The large open area centrally located at coordinates [113.9858, 22.604].
- Site Details:
 - Primary Lot: A large grass field (Polygon 8507771) covering 8,303 m².
 - Expansion Potential: There is an adjacent Construction Site (Polygon 8507770) covering 5,370 m² immediately to the west. Combining these could create a massive complex of over 13,000 m².
- Why here?
 - High Demand (Residential): It is just steps away from the "Phase 2" dormitory cluster, including Violet (Ziluolan), Holly (Dongqingshu), and Bougainvillea (Sanjaomei).

- High Demand (Academic): It is directly adjacent to the Four Square Building (Sifang Lou), a massive 14,351 m² academic complex.
- Accessibility: It is close to Likang Road, making delivery access easy for vendors.

Recommendation 2: The "Library View" Cultural Plaza

If you envision a quieter, high-end retail space (e.g., bookstores, cafes, study lounges), this location near the library is ideal.

- Location: East of the central axis, near coordinates [113.987, 22.604].
- Site Details: A grass lot (Polygon 1273961086) covering 4,591 m².
- Why here?
 - Landmark Proximity: It is right next to the Qiming Library, the intellectual heart of the campus.
 - Target Audience: Perfect for capturing students coming from the Engineering College (North & South) and the Academic Exchange Center.
 - Vibe: The surrounding area includes the Engineering College Plazas (Parks), offering a scenic, park-like atmosphere suitable for outdoor dining.

Recommendation 3: The South Village Commercial Pocket

For a smaller, convenience-focused "mini-mall" catering to the southern dorms.

- Location: In the southern residential zone, near coordinates [113.986, 22.600].
- Site Details: A meadow (Polygon 1317732926) covering 1,816 m².
- Why here?
 - Underserved Area: Serves the residents of Wind Hyacinth, Hawthorn Tree, and Poplar Forest dormitories who are further away from the central commercial areas.
 - Sports Crowd: It is located near the Zhichang Gymnasium and tennis courts, making it a great spot for sports drink/snack retail.

10. I'd like to add a new bus stop on campus. Could you please help me plan its location based on the existing bus stop layout? (SZU)

Answer:

Based on the analysis of the existing bus stop distribution and campus facilities in the provided data, there are two strategic locations where a new bus stop would significantly improve campus accessibility. Here is a planning guide for adding a new bus stop, targeting currently underserved high-traffic zones.

Current Bus Stop Layout Analysis

The existing bus network is heavily clustered around the perimeter and specific zones:

- Dormitory Zone (West): Well-served by stops like Violet, Phoenix Tree, and Hu Yang Lin.
- Academic Zone (East/North): Covered by Engineering College, Law and Business College, and Research Building.

The Gap: There is a noticeable coverage gap in the central corridor of the campus, specifically between the western living quarters and the eastern academic block. Students traveling to central facilities often face walks of 300-400 meters from the nearest stops.

Proposal A: The "Central Library" Station (Primary Recommendation)

This location targets the academic heart of the campus, bridging the gap between the western

dorms and the eastern gates.

- Target Facility: Qiming Building (Library) and Famu Restaurant.
- Proposed Location: Approximately [113.9875, 22.6033]. This sits roughly halfway between the existing Lanyue Ridge South stop (West) and Weixin Gate stop (East).
- Rationale:
 - Currently, the library (a high-traffic destination) is located in the center of a ~430m gap between the nearest east/west stops.
 - It would provide direct access to the Academic Exchange Center (B3) and Wenhui Auditorium.

Proposal B: The "Sports Center" Station

This location serves the recreational cluster, which often requires carrying heavy equipment, making proximity important.

- Target Facility: Swimming Pool, South Fish Sports Centre, and Wind and Rain Playground.
- Proposed Location: Approximately [113.9863, 22.6012]. This fills the North-South gap between the Lanyue Ridge South stop (North) and the Caiwei stop (South).
- Rationale:
 - The distance between the Caiwei stop and Lanyue Ridge South is nearly 400 meters.
 - Placing a stop here would directly serve the swimming pool entrance and the Zhichang Gymnasium (C3).

Summary of Coordinates for New Stop Planning

| Proposal | Target Area | Estimated Coordinates | Nearest Existing Stops |
|-----------------|-------------------|-----------------------|---|
| A (Priority) | Library / Central | 113.9875, 22.6033 | Lanyue Ridge South (~200m), Weixin Gate (~200m) |
| B | Sports / Pool | 113.9863, 22.6012 | Caiwei (~190m), Lanyue Ridge South (~190m) |