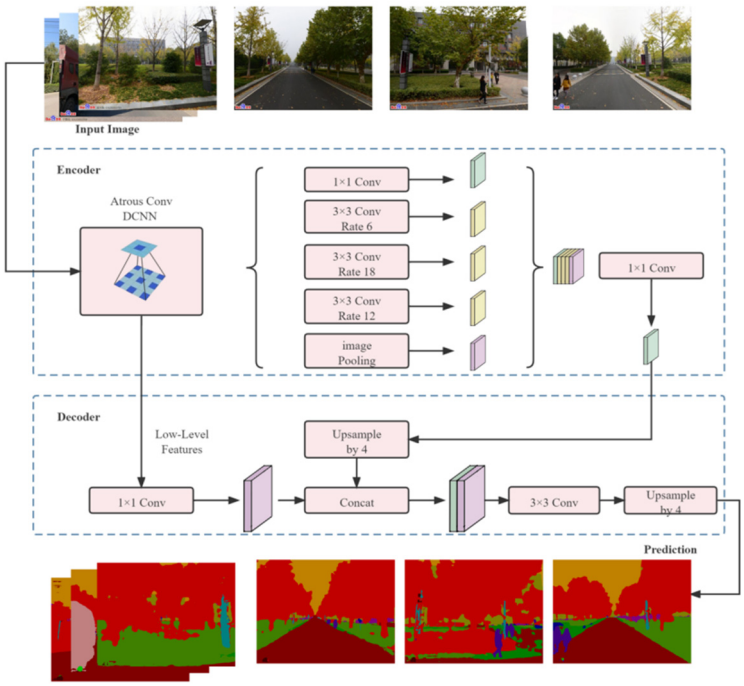
Supplementary Information

Supplementary Figure S1

Supplementary Table S1 to S4

Supplementary Figure S1. DeepLabV3+ architecture.DeepLabV3+ uses the hollow space convolutional Atrous Spatial Pyramid Pooling structure to achieve multi-scale feature extraction.



* Notes: DeepLabV3+ uses Atrous Spatial Pyramid Pooling to achieve multi-scale feature extraction by parallel sampling with different sampling rates of hollow convolution. Meanwhile, depth-separable convolution is used to reduce the number of parameters and improve the computational efficiency. In addition, the Cityscapes dataset, which is more in line with the composition of urban scenes, is used as the training data for this study. the Cityscapes dataset, which is also known as the cityscape dataset, contains more than 5000 finely annotated urban scene images from more than 50 cities, and the trained neural network can be used for semantic segmentation of the urban scene images, extracting the green visibility data, and extracting the green visibility data.

Supplementary Table S1. Major urban green space attractiveness evaluation factors.

Evaluation dimesion	Evaluation variables	Causality	Score
Ballpark	area of green space	Area in the bottom 1/3 of all green space rankings in the range	0
		Area 1/3 to 2/3 of the ranking of all green spaces in the range	1
		Area in the top 1/3 of all green space rankings within the range	2
Elements of the internal environment	plant cover	Vegetation cover <65 per cent	0
		Vegetation cover ≥ 65 per cent	1
	road network	Road network density <150 m/hm2 or Road network density >380 m/hm2	0
		150 m/hm2 ≤ road network density ≤ 380 m/hm2	1
	body of water	no water feature	0
		With water feature	1
	activity Facilities and Venues	No activity space and facilities	0
		Have activity areas (e.g., plazas, children's playgrounds, fitness trails, recreational facilities, etc. impervious surfaces)	1
Neighbourhood elements	POI density of neighbourhood services	POI density ranks in the bottom 1/3 of all green spaces	0
		POI density ranked 1/3 to 2/3 of allgreen spaces	1
		POI density ranked in the top 1/3 of all green spaces	2

* Notes: The size of the area is one of the most basic indicators in the evaluation of the quality of urban green space, and it is generally believed that a larger area is more conducive to the protection of flora and fauna and can provide better ecological services. Vegetation and road network, as the basic elements in green space, are also key basic indicators in quality evaluation. According to the delineation of their thresholds in the Park Design Code (GB51192-2016) and other relevant planning documents, the vegetation coverage≥65% and road network density between 150 m/hm2 and 380 m/hm2 are set as the optimal interval. As people are hydrophilic, water bodies in green spaces can not only have certain ecological value, but also satisfy people's aesthetic needs and benefit their physical and mental health, so the presence or absence of water bodies is used as an evaluation variable. Activity venues and facilities represent potential opportunities for residents to carry out physical activities and obtain more recreational services. In addition, the study of community life circle scale will involve more small and micro green spaces, the limitations of the scale make it impossible to include all the service facilities, and it is necessary to complement them with the service facilities in the periphery, so this study uses the density of POI of public service facilities in the 300-metre buffer zone around the green space that has a positive impact on the service level of the green space as an evaluation variable.

Supplementary Table S2. List of research data.

Data name	Data content	Data sources	Data type
Urban green space	Urban green space within the study area Location, extent, road network information and other data	BigeMap map download platform, Nanjing Green Space System Plan (2013-2020), field research	Vector data, planning documents, research data
	Normalized vegetation index (NDVI)	Sentinel-2 Sentinel-2 series satellite data	raster data
	Images of the urban streetscape at each observation point within the study area	Baidu Map API	network data
Basic urban data sets	Administrative boundaries of Gulou District and its neighboring streets	BigeMap Map Download Platform, Recent Implementation Program of Land Space Planning for Baotaqiao Street and Other Streets in Gulou District of Nanjing City	Vector data, planning documents
	Pedestrian transportation network, water system	BigeMap Map Download Platform	vector data
	Service facility POI data (dining and shopping services, sports and leisure services, public facilities, etc.)	Gao De Map (Chinese version of GPS)	network data
Living area	Residential neighborhood POI data (Name, latitude and longitude coordinates, address, etc.)	Baidu Map API	network data
	Information on socio-economic attributes such as housing prices	Shell (https://nj.ke.com/)	network data
Demographic data	2020 Seventh Census of Gulou District Townships and Streets Usual Resident Population Data	Nanjing Municipal Bureau of Statistics (http://tjj.nanjing.gov.cn/)	statistical data
	Baidu Heat Map (real-time population spatial distribution data)	Baidu Map API	network data

Supplementary Table S3. List of research data.

Colour	Swatches	Channel value			Population density person · hm^{-2}
		R	G	B	
none (transparent)		0	0	0	0
blue (colour)		0	0	205	default (setting)
pale blue		0	82	205	by default
cyan		0	205	205	0~10
greener		0	205	0	10~20
pornographic		205	205	0	20~40
orange (colour)		205	78	0	40~60
pink		205	0	0	＞60

* Notes: According to previous research, the fourth channel of Baidu heat map data, i.e., the Alpha channel value is continuous in a single colour and there is no intersection between the Alpha channel value intervals of each colour, therefore, this paper will continue the hypothesis - the population agglomeration density corresponding to each colour in the image is in Alpha value as a linear relationship. As a result, this paper establishes a population density conversion table between the four channels of the TIF raster image R, G, B, and Alpha, and the fine population density.

Supplementary Table S4. Community life circle green space service supply index socio-economic difference evaluation.

Orderliness				Test Statistics		
Evaluation indicators	Economic attribute level	Number of cases	Ordinal mean	Chi-square	Degrees of freedom	Asymptotic significance (p-value)
Availability	Low grade	20	47.75	11.720	4	0.020**
	Lower grade	21	38.38			
	Mid grade	24	41.46			
	Higher grade	15	51.42			
	High grade	18	65.94			
Accessibility	Low grade	20	38.53	4.517	4	0.340
	Lower grade	21	44.71			
	Mid grade	24	52.44			
	Higher grade	15	50.17			
	High grade	18	55.00			
Attractiveness	Low grade	20	30.98	11.976	4	0.018**
	Lower grade	21	49.88			
	Mid grade	24	52.77			
	Higher grade	15	62.92			
	High grade	18	48.42			
Visibility	Low grade	20	32.70	10.120	4	0.008**
	Lower grade	21	51.48			
	Mid grade	24	50.75			
	Higher grade	15	54.50			
	High grade	18	49.61			
Comprehensive assessment	Low grade	20	29.05	19.404	4	0.001**
	Lower grade	21	43.71			
	Mid grade	24	49.42			
	Higher grade	15	56.08			
	High grade	18	66.78			

* Notes: The basic characteristics of residents' housing are used to describe the basic socio-economic attributes of residents. Referring to the spatial model of Nanjing's residential housing price and type distribution summarised in previous studies, the 98 community life circles within the study area were divided into five socio-economic classes from low to high according to the data on the average price of housing in residential areas in each life circle.