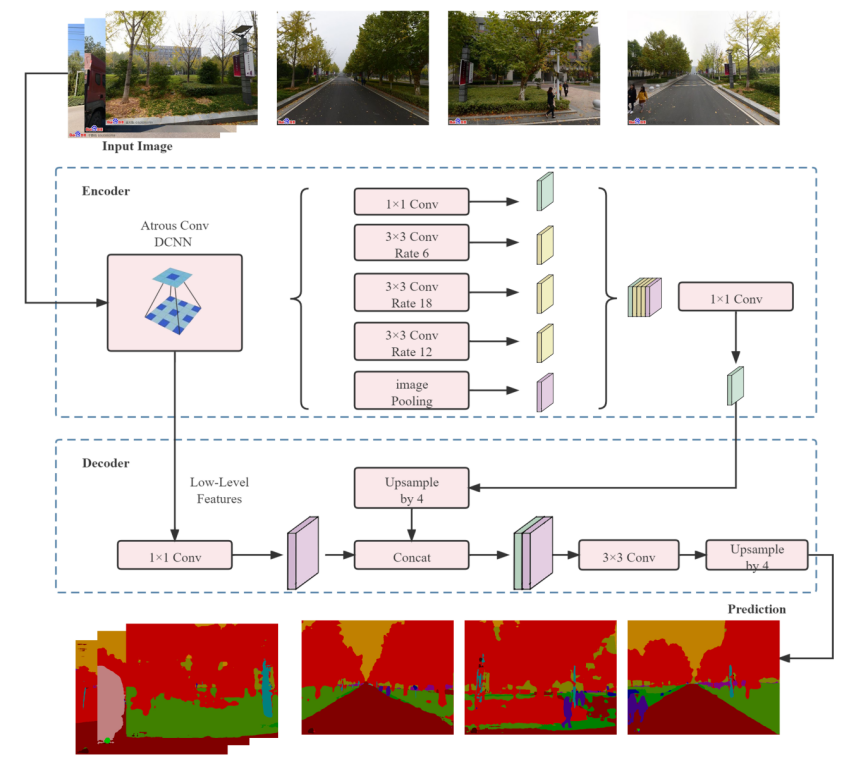
## **Supplementary Information**

Supplementary Fig. A1

Supplementary Table A1 to A4

**Supplementary Fig. A1.** 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. A1.** 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. A2.** 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](https://gisgeography.com/how-to-download-sentinel-satellite-data/) 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. A3.** List of research data.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Colour | Swatches | Channel value | | | Population density |
| 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. A4.** 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.