

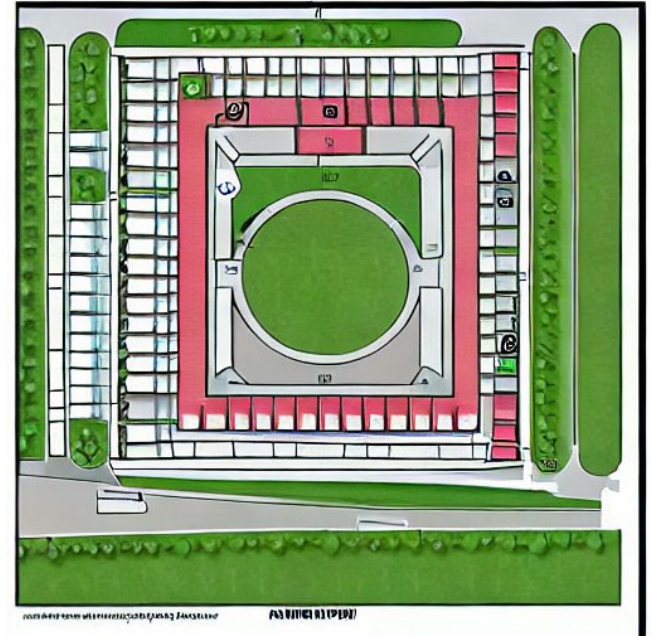
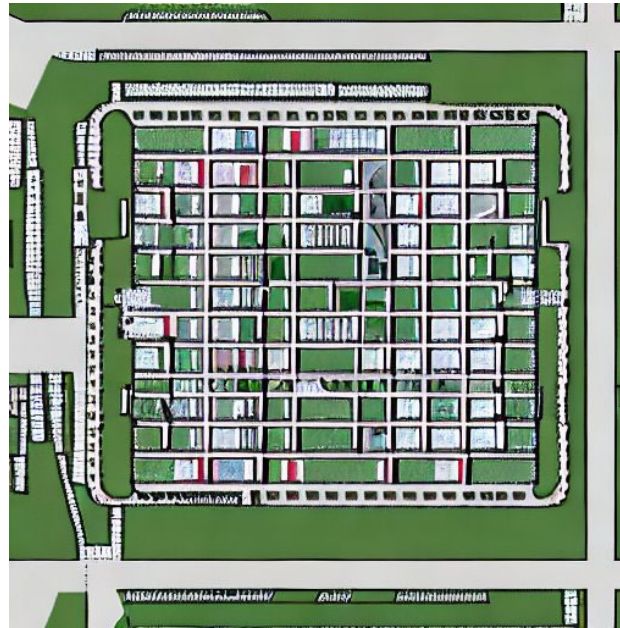
Mapping the Future: Generating Vector Map Layers using ChatGPT and Stable Diffusion for Map Imagery

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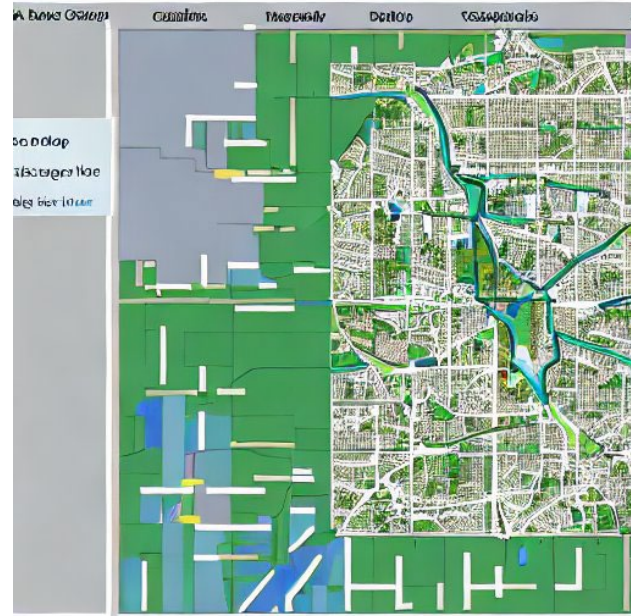
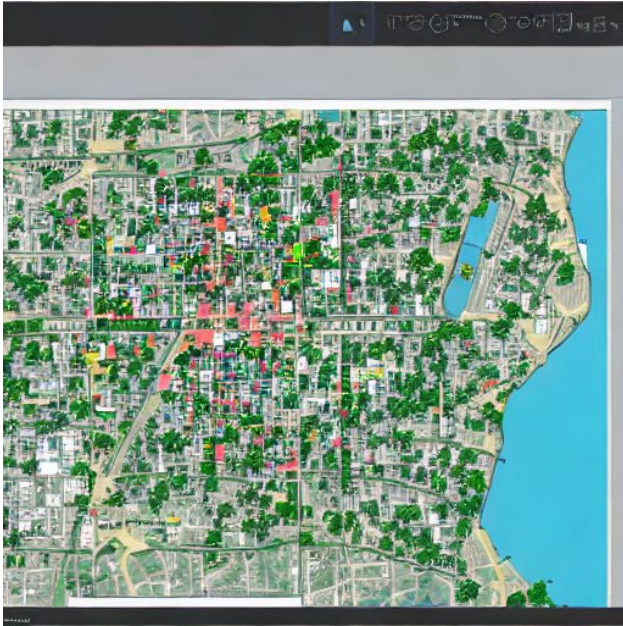
LLM's at scale:

- Great success in remixing imagery, style transfer, generating code or maintaining a conversation,
- Poor performance in reality-grounded results, fact retrieval, planning.
- How do they fare with maps?

To the right: Stable Diffusion asked for: a map of a 500m² area planned in the style of a 15-minute city.



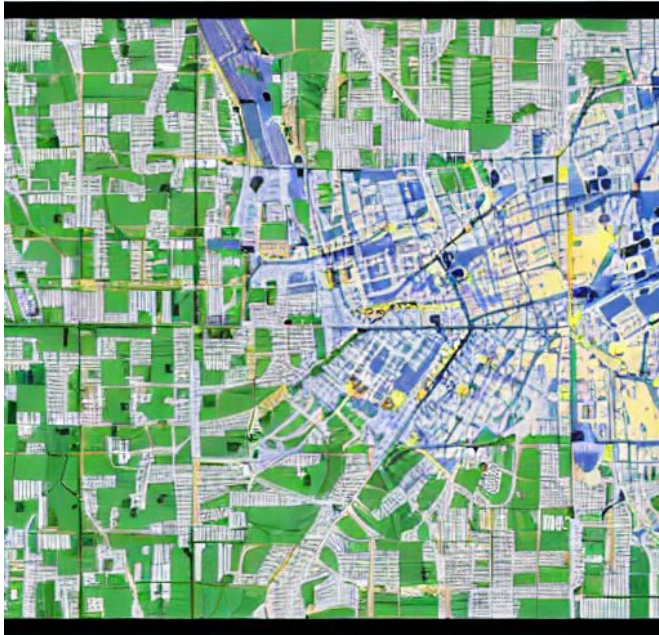
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Can GPT* help with prompting?

Q: Write a prompt for an image model to generate a 15-minute city map

A: "Using a deep learning model, generate a high-resolution map of a hypothetical 15-minute city. The map should display a variety of facilities and amenities that are within a 15-minute walk or bike ride from any point in the city, including but not limited to parks, schools, hospitals, public transportation, shops, restaurants, and community centers. The map should be generated as a 2D image with a resolution of at least 1000x1000 pixels and should be saved in a format that can be easily viewed and shared, such as PNG or JPEG. The model should be trained on a diverse set of real-world urban environments and should strive to create a balanced and equitable distribution of amenities throughout the city, taking into account factors such as population density, income, and accessibility. The generated map should be visually appealing and easy to understand, with clear labels and symbols for each facility and amenity."



Result from StableDiffusion to the left.

GPT failed to generate a properly parsable GeoJSON when asked for variants of the 15-minute city prompts.

Maybe a vector layer then?

As an AI language model, I am unable to directly generate GeoJSON files. However, I can provide you with an example of a simple GeoJSON file for a hypothetical 15-minute city, featuring a few points of interest within a 500m x 500m area. You can modify this template according to your needs.

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{
  "type": "FeatureCollection",
  "features": [
    {
      "type": "Feature",
      "geometry": { "type": "Point", "coordinates": [0, 0] },
      "properties": { "name": "Central Park", "amenity": "park" }
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    },
    {
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      "geometry": { "type": "Point", "coordinates": [-0.003, 0.003] },
      "properties": { "name": "City School", "amenity": "school" }
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    {
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      "geometry": { "type": "Point", "coordinates": [0.003, -0.003] },
      "properties": { "name": "Public Library", "amenity": "library" }
    },
    {
      "type": "Feature",
      "geometry": { "type": "Point", "coordinates": [-0.002, -0.002] },
      "properties": { "name": "Metro Station", "amenity": "public_transport" }
    }
  ]
}
```

What now?

We're in luck, there's much progress to be made!

- Curating datasets with described map tiles, including both map style and urban planning style information
- Training multi-task large models on map data only
- Finetuning models for map generation:
 - Classical LM/Diffusion finetuning of existing models
 - Building something like RL2Map
- Style transfer as both *styling the output* and *designing the content*