

Background

NTT uses EVs to provide power to maintain service even in the event of a widespread outage. At that time, they must visit and provide power over a short distance while avoiding depleting the base station's batteries. Thus, the EV routing plan must satisfy both constraints and efficiency.

Summary

Our technology can quickly generate efficient routes using AI (deep reinforcement learning) while considering the base stations' remaining batteries. It generates a multi-vehicle route to visit 100+ points in a few minutes (traditional mathematical optimization techniques take several hours).

Generate training data

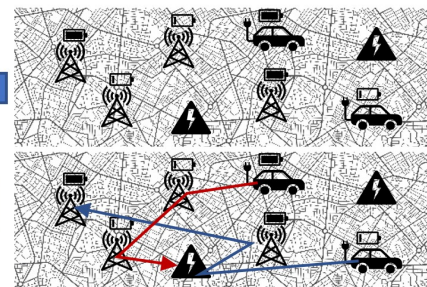
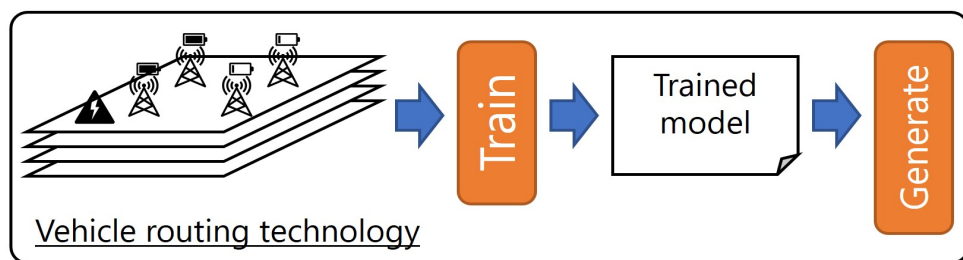
Randomly generate a large amount of training data, including location of base stations and charging stations, battery capacity, etc.

Train

Train to generate routes that avoid dead batteries by trial and error using the generated training data.

Generate route

Feed data of outage base stations, charging stations, and EVs into the trained model. Generate routes to avoid dead batteries.



Features

- Know the status of all vehicles and points to visit using the centralized model and generate a route that allows them to work together to meet efficiency and constraints
- Apply a deep learning model that computes efficiently by focusing on an important portion of the data to reduce the computation time for an accurate routing plan
- Generate over 1,000,000 virtual maps to train the model, allowing a wide variety of data to be trained without real data, so routes can be generated for any region of the country

Future_benefits

It helps maintain communication services and reduce the cost of facility inspections. We also target various vehicle routes such as repair, garbage and on-demand transportation.

Exhibiting Company

NIPPON TELEGRAPH AND TELEPHONE CORPORATION, NIPPON TELEGRAPH AND TELEPHONE EAST CORPORATION, NTT DOCOMO, INC.

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