# Allison Transmission

- World leading provider of automatic transmissions for commercial vehicles (School buses, Cement mixers, etc.)
- 100+ years of experience, headquarters in Indianapolis
- Approximately 3,400 employees with a market presence in 150+ countries
- Over 30 year of experience in electrified propulsion

Allison Vision
Be the global leader in commercial-duty propulsion solutions that improve the way the world works.
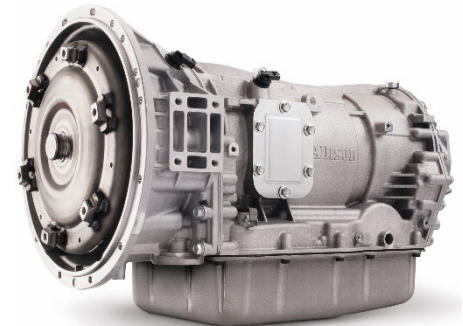
Allison Promise
Provide the most reliable and valued propulsion solutions in the world to enable our customers to work more efficiently.
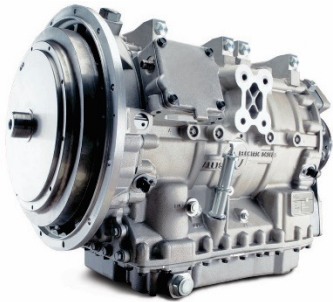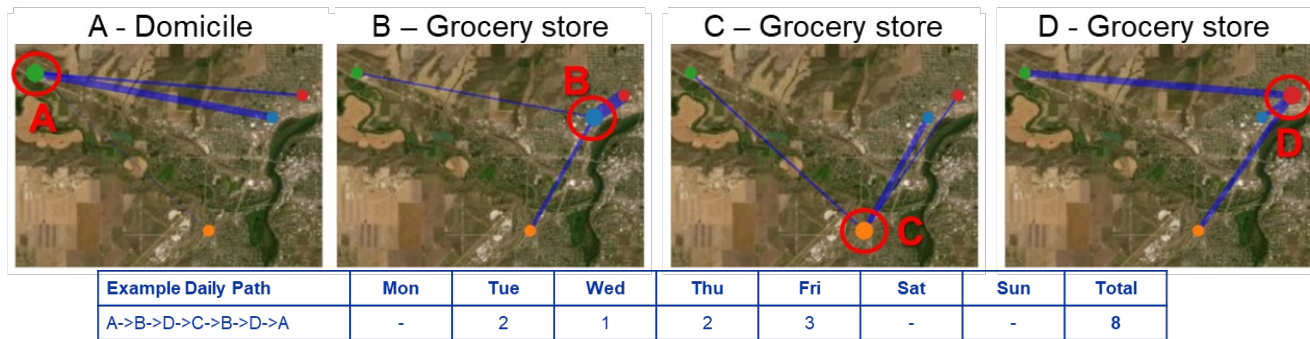
two-mode parallel hybrid transmission for buses

Fully electric e-axle for medium and heavy-duty vehicles

Conventional 9-speed transmission for commercial vehicles

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Project #1 Spaciotemporal productivity KPIs

Description: Create spaciotemporal metrics for vehicle delivery routes e.g. time spent at delivery stop, time flexibility of delivery windows, average distance between delivery stops, etc. This KPIs will be used to characterize and compare delivery routes, identify anomalies and quantify trade-offs between time and energy

Keywords: Spaciotemporal analysis, Vehicle telematics data, Productivity metrics, Anomaly detection

Source data: Transactional data from telematics providers monitoring performance of vehicles equipped with Allison transmissions in the field (over 20+ signals at different sampling rates, including position)

Tools/Skills: Experience with (1) complex aggregation in **Python** e.g. "groupby" operation (2) familiarity with trajectory analysis libraries such as **GeoPandas**, MovingPandas, Tracktable, etc. and manipulating geometry data. A starter Python code will be provided to analyze three weeks of cleaned data from a single delivery vehicle, delivering to three grocery stores within a small urban area.

Citizenship: Open to all students

A - Domicile   B – Grocery store   C – Grocery store   D - Grocery store

Example Daily Path	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Total
A->B->D->C->B->D->A	-	2	1	2	3	-	-	8

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Project #1 (Continued) Fuel consumption prediction model for truck across given route

Description: Create a machine learning model that can predict fuel consumption of a truck across a given route using historical journey data for training and/or data from the early segments of the journey.

Keywords: Machine learning, prediction, feature extraction, regression

Source data: Transactional data from telematics providers monitoring performance of vehicles equipped with Allison transmissions in the field (over 20+ signals at different sampling rates, including position)

Tools/Skills: Python, machine learning

Citizenship: Open to all students

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