

Job Descriptions for AVS Project

Two Co-op and/or paid-research opportunities within the Department of Mechanical Engineering and Mechanics will be available for the coming co-op cycles Spring-Summer 2023 and Fall 2023-Winter 2024.

Drexel University is working with multiple partners on testing Pennsylvania's First Automated Shuttle. Prof. Fafalis and Prof. Bhargava will each lead one task on this project and are looking for students who can assist them.

Prof. Fafalis will lead the task of analyzing the shuttle's performance. Prof. Bhargava will lead the task of collecting and analyzing riders' experience interacting with the shuttle, and any feedback they may have. Our results will aid other stakeholders of the project in improving the ride quality in the future.

For each task, we have one paid position. Please read the detailed description of each task below and apply for the one you are most interested in. To apply, contact either Prof. Fafalis (df573@drexel.edu) or Prof. Bhargava (db3493@drexel.edu) based on the task you want to work on and attach your most recent resume. Feel free to reach out to us in case you have questions.

Description for Position 1:

This co-op or paid-research position will be responsible for analyzing data collected from the operation of a physical autonomous vehicle shuttle (AVS). The data will be provided in the form of video frames and multivariate time series. The scope of work involves analysis of the data using state-of-the-art python-based machine learning and computer vision algorithms, such as TensorFlow, PyTorch, OpenCV, scikit-learn, and more. The goal of this task is to observe the interactions of the AVS with its surrounding environment during its operation, and its performance under various traffic conditions.

Number of Openings:

For the co-op cycle Spring 2023-Summer 2023: one (1)

For the co-op cycle Fall 2023-Winter 2024: one (1)

Qualifications for position 1:

Required qualifications:

Excellent programming skills in Python or other programming language.

Highly preferred qualifications:

Experience with machine learning packages such as TensorFlow, PyTorch, and computer vision packages, such as OpenCV.

Other qualifications:

Passion to learn data analytics and machine learning modeling (this is a must!).
Thrilled to apply machine learning in the field of autonomous vehicles (this is also a must!).
Technical aptitude, including an above-average problem-solving capability.
Understanding of basic statistics and probability theory.

Location:

The completion of the work can be performed either on campus or remotely.

Preferred Majors:

Mechanical Engineering, Electrical Engineering, Computer Science

Description for Position 2:

For this task, you will work on qualitative analysis of riders' interactions with the shuttle. You will be involved in designing surveys that collect riders' perceptions of automated vehicles, their experience riding the shuttle, and any feedback they may have. Additionally, you will conduct focus groups to gain a deeper insight into the riders' interactions with the shuttle. You will learn and apply qualitative methods to analyze data collected from the surveys and focus groups.

Number of Openings for Position 2:

For the co-op cycle Spring 2023-Summer 2023: one (1)

For the co-op cycle Fall 2023-Winter 2024: one (1)

Qualifications for position 2:

Required qualifications:

Excellent programming skills in Excel, Python, Matlab or other programming language.

Other qualifications:

Interest in human factors and interacting with people
Passion to learn qualitative data analytics
Thrilled to apply machine learning in the field of autonomous vehicles.
Technical aptitude, including an above-average problem-solving capability.
Excellent verbal communication skills.
Understanding of basic statistics and probability theory.

Location:

The completion of the work can be performed either on campus or remotely.

Preferred Majors:

Mechanical Engineering, Electrical Engineering, Computer Science