STAA57 Group Project

What are the dominant research areas in Ontario's automotive sector, and how do institutions specialize in different fields

Minh Tran - 1006804914

2025-03-15

I. Introduction

Research Goal

Nowadays with the rising trend of electric vehicles (EV) and AI in generally as well as rising rend of AI development and AI implication in manufacturing autonomous vehicles such as Tesla. It is important that automotive research facilities in Ontario focus their efforts and resources on the correct fields in order to make noticeable contribution to the academia world as well as helping the government enforce suitable policies and education facilities to adjust their curriculum in a timely faction so that the society could enjoy the benefit of this new technologies while preventing the potential harm of a new area.

This report aim at understanding the automotive research fields that are being focused on by Ontario's research facilities and the specialist facility in trending fields. It will also look at which fields are attracting the highest number of researchers, institution specialization in specific research areas and the relationship between funding and research areas.

Dataset description

Data source

Our data set was collected by researchers of the Ministry of Economic Development, Job Creation and Trade and was posted on government of Ontario public database in 2018 to work on issue related to connected and autonomous vehicles, hybrid and electric power trains, new material being introduced in the fields

```
## Rows: 5
## Columns: 5
## $ Institution      <chr> "University of Windsor", "McMaster University", "Uni~
## $ `Researcher Name` <chr> "Abdel-Raheem, Esam", "Afshari, Hamed", "Agnew, Gord~
## $ Facilities        <chr> "Research Center for Integrated Microsystems", "Cent~
## $ `Research Areas`  <chr> "Cognitive Radio Networks, CR-Vehicle Adhoc Networks~
## $ Funding           <chr> "", "", "No NSERC. (Since 2010)", "", ""
```

Institution	Researcher Name	Facilities	Research Areas	Funding
University of Windsor	Abdel-Raheem, Esam	Research Center for Integrated Microsystems	Cognitive Radio Networks, CR-Vehicle Adhoc Networks, Signal Processing for Communications, Digital Signal/Image Processing, VLSI SP Systems	
McMaster University	Afshari, Hamed	Centre for Mechatronics and Hybrid Technologies	Control and dynamic systems, state estimation, mechatronics, battery management systems, fault detection and diagnosis.	
University of Waterloo	Agnew, Gordon	WATCAR	CVAVs: cryptography and data security, high speed communications networks.	No NSERC. (Since 2010)
University of Windsor	Ahamed, Jalal	MEMS Laboratory	Micro-electromechanical devices, including with applications for dynamic motion sensing.	

University of Windsor	Ahmadi, Majid	Research Center for Integrated Microsystems	Digital Signal Processing, Image Processing, Neural Networks

This dataset