MICHIGAN STATE UNIVERSITY Beta Presentation Synthetic Media

The Capstone Experience

Team Urban Science

Suhan Park Misha Lemper Evan Marks Neil Khedekar

Department of Computer Science and Engineering Michigan State University

Fall 2023



Project Overview

- Real-time analyzed data dashboard
- Real-time generated analysis-explaining virtual avatar video
- Downloadable data analysis report and video
- Shareable media

System Architecture



Main User Dashboard



The Capstone Experience

Team Urban Science Beta Presentation

Analysis Pop-Up Screen



The Capstone Experience

Team Urban Science Beta Presentation

Analysis Report View

The rest of Monthly Service Retention for Car Bends at a Bedership 1 area of the distribution of the rest of the mostly service retention meters for the rest of the distribution of the rest of the r	
The first set of Monthly Service Retention for Car Benads at a Declarity is using a sequent for the provide an indepting analysis of the monthly service retention mesory of the monthly service retention mesory of the first set on the start set of the deletability as were governed at a condicient site involution of the require will focus on the behavior set of the deletability as were governed at a condicient site involution of the require will focus on the behavior set of the deletability as were governed at the set of the deletability as were governed at the set of the deletability as were governed at the set of the deletability as were governed at the set of the deletability as were governed to the dele	-
The Analysis of Monthly Service Retention for Car Bands at a Dealership 1. Introduction: This technical report into the provide on the dealership a service retention in the form and response of 10.00 km controls the to analysis of the monthly service retention in the form the analysis of the monthly service retention in the form the analysis of the monthly service retention in the form the analysis of the monthly service retention in the form the average monthly tertion in the correlia dealership a service of the dealership 1. Analysis of Monthly Service Retention for Carbon terms before the dealership 2. Analysis of Monthly Service Retention for the monthly service retention in the form the average monthly tertion in the dealership a service retention in the form the average monthly tertion in the dealership is average. The average monthly service retention in the form the average monthly tertion in the dealership is average. The average monthly service retention in the form the monthly service retention in the form the average monthly tertion in the dealership is average. The average monthly service retention in the form the average monthly service retention in the thread terms and the average monthly service retention in the terms average monthly service retention in the form the average monthly service retention in the form the a	
This Analysis of Monthly Service Retention for Car Brands at a Dealership 1. Introduction: This technical report aims to provide an in-depth analysis of the monthly service retention methods are dealership social and the advecting average of the dealership service retention the there is a definitely in the service methods are dealership social and the dealership service retention method the advecting average of the dealership service retention methods are dealership social retention for service is relatively high, with an average are dealership social retention for exercise methods the object of 23.44%. In terms of age, Fred Valuels returning for service is relatively high, with an average are needed to the date-ship social retention method the advecting average of the average conditions. The brand consistently perform advec with an average are dealership social retention from C24.44%. In terms of 28.44%. In terms of 28.44%. In terms of age, Fred Valuels returning for service is relatively high, with an average are needed to the advecting average of the a	
The field of the f	
This: Analysis of Monthly Service Retention for Car Brands at a Dealership 1. Introduction: This technical report aims to provide an in-depth analysis of the monthly service retention for Car Brands at a Dealership 1. Introduction: This technical report aims to provide an in-depth analysis of the monthly service retention for Car Brands at a Dealership 1. Introduction: This technical report aims to provide an in-depth analysis of the monthly service retention for Car Brands at a Dealership 1. Introduction: This technical report aims to provide an in-depth analysis of the monthly service retention for Car Brands at a Dealership 1. Introduction: This technical report aims to provide an in-depth analysis of the monthly service retention for Car Brands at a Dealership 2. Analysis of Monthly Service Retention for Car Brands at a Dealership 2. Introduction: This technical report aims to provide an in-depth analysis of the monthly service retention. The brand Scherrolet, Foed, and GMC. The report will present will for service interaction for Car Deavolet that been experimentee of the dealership 2 warrage. The average methodly service retention. The brand Scherrolet, Foed, and GMC. The report will present will focus on the dealership 2 warrage. The average methodly service retention. The brand Scherrolet, Foed, and GMC. The report will present will focus on the dealership 2 warrage. The average methodly service retention. The brand Scherrolet, Foed, and GMC. The report will present the for Charvolet to the dealership average. The average methodly service retention. The brand Scherrolet, Foed, and GMC. 2. Thereofet: Based on the data to through the present based on the data to through the present the dealership average. Foed vehicles returning for service is retention. The brand Scherrolet present is a service at a second to the data to through the present the average and of Tab Orea Scherolet. The through second at the dealership average of Tab Orea Scherolet. The through second at thorea to the data to through the pre	
The Analysis of Monthly Service Retention for Car Brands at a Dealership 1. Introduction: This technical report aims to provide an in-depth analysis of the monthly service retention meters or eliferent months and provide mights into the overall performance of the dealership? Sectionally service retention meters or the start of the start of the start months and provide mights into the overall performance of the dealership? Sectionally service retention meters or the start of the start or the start months and provide mights into the overall performance of the dealership? Analysis of Monthly Service Retention for Car Brands at a Dealership 1. Introduction: This technical report aims to provide an in-depth analysis of the monthly service retention meters over different car brands at a car dealership. Sectifically, we will focus on the brands Cherrolet, Feed, and GMC. The report will present the service retention meters over different months and provide mights into the overall performance of the dealership. Analysis of Monthly Service Retention for Car Brands at a Car dealership's secrege. The average monthly service retention methods were the start of the dealership's secrege. The average monthly service retention method server different months and provide mights into the overall performance of the dealership's secrege. The average monthly service retention for Car Brands at a Car dealership's average. The average monthly service retention method server different months and provide mights into the overall performance of the dealership's secrege. The average monthly service retention method server the start on the start of the dealership's average. The average monthly service retention method server the start of the dealership's average of the dealership's secrege. The average monthly service retention method constrates through the perform show the dealership's average. The average monthly service retention method server the mark of the dealership's average of the dealership's average of the dealership's average of	
The Analysis of Monthly Service Retention for Car Brands at a Dealership 1. Introduction: This technical report aims to provide an in-depth analysis of the monthly service retention trends for different car brands at a Dealership 1. Introduction: This technical report aims to provide an in-depth analysis of the monthly service retention trends for different car brands at a Dealership 1. Introduction: This technical report aims to provide an in-depth analysis of the monthly service retention match so at car dealership. Specifically, we will focus on the brands Chevrolet, Feed, and GMC. The report will present the Service retention matches over different car brands at a Dealership 1. Introduction: This technical report aims to provide an in-depth analysis of the monthly service retention. The brand costs of the dealership is service retention. The brand costs of the dealership is service retention matches the overall dealership average of 21.00%. Moreover, the age of Chevrolet to thicks returning for service is relatively high, with an average age of 11.01 years in November, indicating potential brand loyalty, 2.3 GMC. Unfortunately, GMC exhibits the lowest brand retention mane, there analy a ge of 17.0 years in November, indicating potential brand loyalty, 2.3 GMC. Unfortunately, GMC exhibits the lowest brand retention among the tree analyse brands, with a mean retention rate of 0.21 prey ever. This means that GMC vehicles are not returning for service is retention three sendy obsends, with a mean retention rate of 0.21 prey ever. This means that GMC vehicles are not returning for service as inclusively. Four every and prevent and prevents and prevent and prevent and prevent and prevent and prevent and prevents and prevent and prevented and	
The Analysis of Monthly Service Retention for Car Brands at a Dealership 1. Introduction: This technical report aims to provide an in-depth analysis of the monthly service retention makes for different car brands at a Dealership 1. Introduction: This technical report aims to provide an in-depth analysis of the monthly service retention makes for different car brands at a car dealership. Specifically, we will focus on the brands Chevrolet, Foral, and GMC. The report will present the Service retention makes for different car brands at a car dealership. Specifically, we will focus on the brands Chevrolet, Foral, and GMC. The report will present the Service retention makes for different car brands at a car dealership. Specifically, we will focus on the brands Chevrolet, Foral, and GMC. The report will present the Service retention makes for different months about the years of the coverall performance of the dealership service retention mate for Chevrolet is 23.5%, which is slightly about the overall dealership overalls performation of the dealership average. The average monthly service retention mate for Chevrolet is 23.5%, which is slightly average, with an average and 021.0%. Moreover, the age of Chevrolet vehicles returning for service in strately high, with materian average age of 13.0 years in Novomber, 2.2 Ford, Found, on the other hand, displays a positive trend in monthly service retention. The brand were average age of 0.21 per year. This mans that GMC vehicles are not returning for service have an average age of 0.17 years in novomber, indicating potential brand loyalty. 2.3 GMC unformately, GMC exhibits the lowes that necession may be breaded with a materian and retention rate of 0.21 per year. This mans that GMC vehicles are not returning for service a sequence. Furthermore, in November, MC vehicles are not returning for service as frequently as expected. Furthermore, in November, MC vehicles are not returning for service as expected. Furthermore, in November, MC vehicles are not returning for service a	
This: Analysis of Monthly Service Retention for Car Brands at a Dealership 1. Introduction: This technical report aims to provide an in-depth analysis of the mouthly service retention methods for different car brands at a Car dealership. Specifically, we will focus on the brands Chevrolet, Ford, and GMC1. The report will present in for Chevrolet, Ford, and GMC1 2.1 Chevrolet: Based os the data collected, Chevrolet has been experiencing a negative trend in monthly service retention. The brand's service retention methods for different car brands at a cor dealership in the dealership's average of the dealership's average of Chevrolet has been experiencing a negative trend in monthly service retention. The brand's average retention methods for overal dealership average of 21.096. Moreover, the age of Chevrolet whickes returning for service have an average based on 17.0 years in November, 2.2 Ford: Ford, on the other had, displays a positive trend in monthly service retermion. The brand's area and readenship average of Chevrolet whickes returning for service have an average based on 17.0 years in November, 2.2 Ford: Ford, on the other had, displays a positive trend in monthly service retermion method was mean retention rate of 0.21 per year. This means that GMC vehicles are not returning for service as frequently as expected. Furthermore, in November, GMC vehicles	
Title: Analysis of Monthly Service Retention for Car Brands at a Dealership 1. Introduction: This technical report aims to provide an in-depth analysis of the monthly service retention transk for different car brands at a car dealership. Specifically, we will focus on the brands Chevrolet, Ford, and GMC. The report will present the service retention months and provide insights into the overall performance of the dealership. 2. Analysis of Monthly Service Retention for Car Brands at a car dealership. Specifically, we will focus on the brands Chevrolet, Ford, and GMC. The report will present the service retention moths and provide insights into the overall performance of the dealership. 2. Analysis of Monthly Service retention. The brand's average retention mute fluctuates throughout the year but remains below the dealership's average. The average monthly service retention mute for Chevrolet is 23.5%, which is slightly above the overall dealership average of Chevrolet vehicles returning for service is relatively high, with an average age of 13.0 years in November. 2.2 Ford: Ford, on the other hand, displays a positive trend in monthly service retention more the dealership average, will an average monthly retention rate of 28.44%. In terms of age, Ford vehicles returning for service have an average age of 17.0 years in November, and they are set that indicating potential brand loyalty. 2.3 GMC. Unfortunately, GMC exhibits the lowes thand retention among the three analyzed brands, with a means that GMC vehicles are not returning for service as frequently as expected. Furthermore, in November, GMC vehicles	
Title: Analysis of Monthly Service Retention for Car Brands at a Dealership 1. Introduction: This technical report aims to provide an in-depth analysis of the monthly service retention timeds for different car brands at a car dealership. Specifically, we will focus on the brands Chevrolet, Ford, and GMC. The report will present the service retention motes for different car brands and provide insights into the overall performance of the dealership. 2. Analysis of Monthly Service Retention for Chevrolet. Ford, and GMC. The report will present the service retention methods and provide insights into the overall performance of the dealership. 2. Analysis of Monthly Service retention. The brand's average retention mute fluctuates throughout the year but remains below the dealership's average. The average monthly service is relatively high, with an average age of 13.0 years in November. 2.2 Ford: Ford, on the other hand, displays a positive trund in monthly service is relatively high, with an average age of 13.0 years in November. 2.2 Ford: Ford, on the other hand, displays a positive trund in monthly service have an average age of 17.0 years in November, and posity. 2.3 GMC. Unfortunately, GMC exhibits the lowes thand retention among the three analyzed brands, with an average age of 0.2 Per year. This means that GMC vehicles are not returning for service as frequently as expected. Furthermore, in November, GMC vehicles	
service relention trends for different car brands at a car dealership. Specifically, we will focus on the brands Chevrolet, Ford, and GMC. The report will present the service relention make over different months and provide insights into the overall performance of the dealership. 2. Analysis of Moenthy Service Retention for Chevrolet, Ford, and GMC. 2. 1 Chevrolet: Based on the data collected. Chevrolet has been experiencing a negative trend in monthly service retention. The brand's average retention make over all dealership average of 21.00%. Moreover, the age of Chevrolet returning for service is relatively helly with an average age of 15.0 years in November, 2.2 Ford. Ford, on the other hand, displays a positive trend in monthly service is relatively helly with an average age of 15.0 years in November, 2.2 Ford. Ford, on the other hand, displays a positive trend in monthly service have an average age of 17.0 years in November, indicating potential brand loyalty, 2.3 GMC: Unfortunately, GMC exhibits the lowest brand retention among the three analyzed brands, with a netention rate of 0.21 per year. This means that GMC vehicles are not retenting if service and years thereand with the service trends with service treated brands, with a corage networks with a service treated brand with a networker, the case of 0.25 Mereover, the three analyzed brands, with a present the networker, indicating potential brand loyalty, 2.3 GMC. Unfortunately, GMC exhibits the lowest brand retention among the three analyzed brands, with a networker, indicating potential brand loyalty. 2.3 GMC vehicles are not retenting if service as frequently as expected. Furthermore, in November, GMC vehicles	
service relention trends for different car brands at a car dealership. Specifically, we will focus on the brands Chevrolet, Ford, and GMC. The report will present the service relention make over different months and provide insights into the overall performance of the dealership. 2. Analysis of Moenthy Service Retention for Chevrolet, Ford, and GMC. 2. 1 Chevrolet: Based on the data collected. Chevrolet has been experiencing a negative trend in monthly service retention. The brand's average retention make over all dealership average of 21.00%. Moreover, the age of Chevrolet returning for service is relatively helly with an average age of 15.0 years in November, 2.2 Ford. Ford, on the other hand, displays a positive trend in monthly service is relatively helly with an average age of 15.0 years in November, 2.2 Ford. Ford, on the other hand, displays a positive trend in monthly service have an average age of 17.0 years in November, indicating potential brand loyalty, 2.3 GMC: Unfortunately, GMC exhibits the lowest brand retention among the three analyzed brands, with a netention rate of 0.21 per year. This means that GMC vehicles are not retenting if service and years thereand with the service trends with service treated brands, with a corage networks with a service treated brand with a networker, the case of 0.25 Mereover, the three analyzed brands, with a present the networker, indicating potential brand loyalty, 2.3 GMC. Unfortunately, GMC exhibits the lowest brand retention among the three analyzed brands, with a networker, indicating potential brand loyalty. 2.3 GMC vehicles are not retenting if service as frequently as expected. Furthermore, in November, GMC vehicles	
Calculate for the first of t	
which is slightly above the overall dealership average of 21.00%. Moreover, the age of Chevolat vehicles returning for service is relatively high, with an average age of 13.0 years in November, 2.2 Ford; Ford, on the other hand, displays a positive trend in monthly service retention. The brand consistently performs alove the dealership average, with an average monthly retention rate of 28.44%. In terms of age, Ford vehicles returning for service taken the analyzed brands, with a mean retention rate of 0.21 per year. This means that GMC vehicles are not returning for service as frequently as expected. Furthermore, in November, GMC vehicles	
dealership average, with an average inouthly retention rate of 28.44%. In terms of age, Ford vehicles returning for service have an average age of 37.0 years in November, indicating potential brand loyalty, 2.3 GMC. Unfortunately, GMC exhibits the lowest brand retention among the three analyzed brands, when a mean retention rate of 0.21 per year. This means that GMC vehicles are not returning for service as frequently as expected. Furthermore, in November, GMC vehicles	
retention rate stands at 21.00%, which is slightly below the average of other dealerships in the regions. It is essential to note that the dealership had its best month in May, with a retention rate of 43.00%, which ite worst month was in January, with a retention rate of 019 7.00%. A. Conclusion: In conclusion, this analysis underscores the importance of monitoring monthly service retention rates for different car brands at the dealership. Despite the negative rends observed for Chevrolet	
understores the emportance of monotoning monotony service relation rates for anterest car brands at the deaterstop. Despite the negative trates deserved for C. Worker p	

More Information Pop-Up Screen

-					17	-15						
S	SERVICE VIEW-				t	URBAN SC	IENCE					
	Retention	Endering UIO	Continents	Serve Televine	London Al	(F Tarret Daubihard	Conserve Ton Madria Ma	Pethas Breat Course		1.940844 UM Chata	e 1944 (Luise Min/D 1 7 Xoar L	DO LIAR NO
			1999	9977 - C. Marines		MANA AND AND A						
					line					4	±.∞	
		Veh	icle Model	Vehicle	Age	Vehicle Year				×		
	60. 112				Iranil Ratention	by Vohicle Year			1		1	
	1 m					- Pezita a con						
		3020									-	
	20	2021								-		
		2001								Dect. (C	Non Derr	
	mie	2022									Text	
	1211 0000023-00										Street and a line	
	1	2023									4.7	
		0	5	10	146	20	25	20 2		-		
	1.000	• In 2021.	ertain mod		re experie			es compared to of	-	ears To		
	1,075 - 1,400 - 1,600 -					177		e features, marke	373			
	100	CALCER DO NOT THE				2000 - 7 210 - 7010 -		make them more a		0.000202000		
	200 201 200	buyers.	Additionall	실험 방법을 위해야 한 것이			다 이 방법을 즐겨야 했다.	oving any areas o ure model years.	of concern ca	n help		

What's left to do?

- Stretch Goals
 - Fixing email feature
 - Fixing download video feature
- Other Tasks
 - Frontend polishing
 - Code cleaning
 - Code documentation

Questions?

