



Getaround Analysis

Deployment





Context

- **Problem:** Car rental cancellation on Getaround platform
- **Reason:** Late car returns cause friction if next user has to wait
- **Proposition:** Introduce a buffer delay between consecutive rentals
- Also need a car pricing model available through an API



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Tasks

- Analyze the effect of a rental delay buffer on both checkin methods
- Produce a web dashboard to assist the decision (scope, minimum delay)
- Train car pricing optimization models
- Provide access to these models through an API endpoint
- Include the car rental pricing functionality in the web dashboard



Pipeline architecture

Delay analysis
data



Pricing
data



Pipeline architecture

Delay analysis
data



Pricing
data



Pipeline architecture

Delay analysis

data



EDA



Pricing
data



Training



Amazon
EC2





Pipeline architecture

Delay analysis
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XLS



EDA



Pricing
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Training



Amazon
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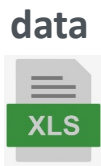
Dashboard





Pipeline architecture

Delay analysis
data



EDA



Training



Amazon
EC2



API



Tracking server



Dashboard



Servers deployment
on



Hugging Face



Pricing optimization API

- Two pricing models
 - Ridge regression (Ridge)
 - Gradient boosting model (GBM)

model	eval. set	MSE	RMSE	R2	MAE	MAPE (%)
Ridge	train	302.900604	17.404040	0.720073	12.198836	14.008746
	test	368.880038	19.206250	0.675800	12.990555	16.596385
GBM	train	144.302489	12.012597	0.866642	8.244311	9.476215
	test	255.668401	15.989634	0.775299	10.215427	13.599528



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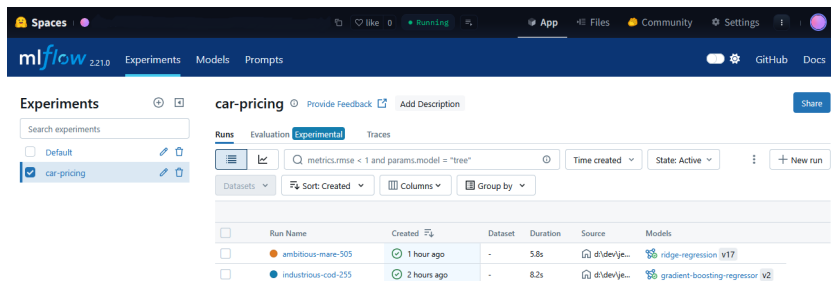


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- Model training and tracking
 - Dispatch training on AWS EC2 instances (MLflow project)
 - Track and record models in MLflow server

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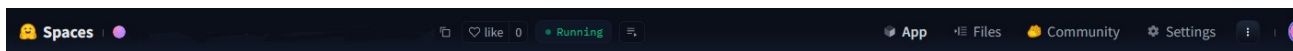
- Setup pricing API
 - Registered models prediction endpoint
 - Provides additional model information

Spaces	App	Files	Community	Settings
Getaround car rental pricing API				
The API interfaces the pricing models registry. It is used by the dashboard to propose a user-friendly pricing estimation.				
Test API test endpoint.				
GET /test Test				
Models info Information about available pricing models.				
GET /pricing_models Get Pricing Models				
GET /categories Get Categories				
Pricing Car rental pricing optimization.				
POST /predict/{model_name} Predict				



Dashboard : car rental pricing

- Check API availability at startup
- Fetch models info
- Pricing evaluation from user input (/predict endpoint)



Getaround dashboard

Hello there! Welcome to this Getaround car rental dashboard. The dashboard provides:

- Visualizations and information related to the implementation of a rental delay.
- A connection to the pricing API to price a car by manually entering its characteristics

Data provided by [Jedha](#)

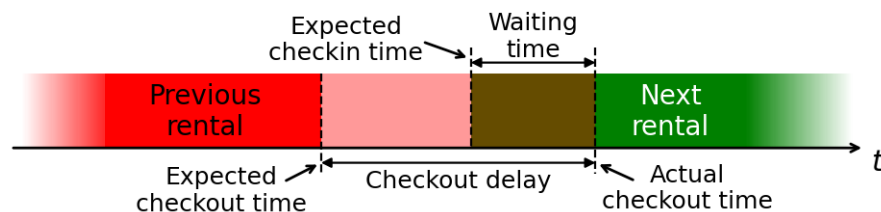
Rental delay analysis Car pricing

Car rental pricing

Car model	Car type	Fuel	Paint color
Alfa Romeo	convertible	diesel	black
<input checked="" type="checkbox"/> Private parking	<input type="checkbox"/> GPS	<input checked="" type="checkbox"/> Air conditioning	<input type="checkbox"/> Automatic car
<input checked="" type="checkbox"/> Getaround connect	<input type="checkbox"/> Speed regulator	<input type="checkbox"/> Winter tires	
Engine power	Mileage		
321	123456		
Pricing model	Recommended price : 199.09		
ridge-regression			



Rental delay analysis



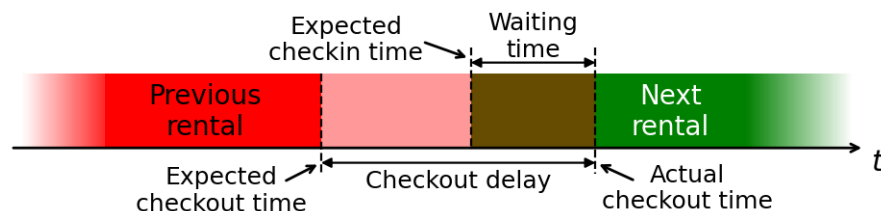
— Late car return problem

- Previous user is late
- Car return delay may overlap with next rental

— Creates friction if next user has to wait



Rental delay analysis



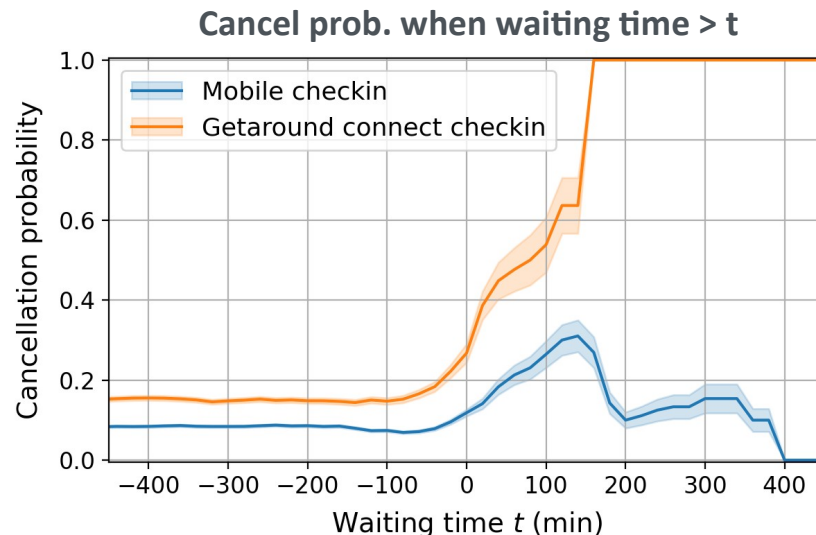
Late car return problem

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Creates friction if next user has to wait

Cancellation probability

- Depends on waiting time
- Depends on the checkin method (Getaround connect or mobile)





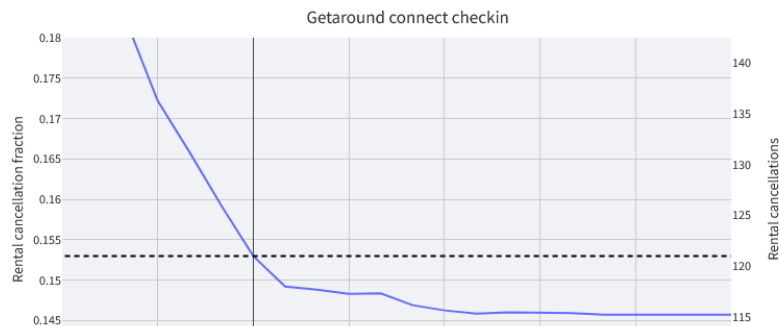
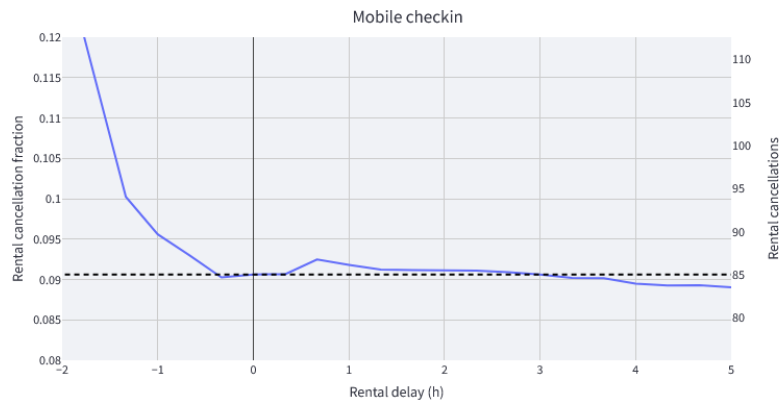
Dashboard : rental delay analysis

- Visualize the effect of a rental delay
 - Cancellation probability
 - Both checkin methods

Summary table

- Rental delay slider
 - Quantitative insights

Car rental delay analysis



Rental delay (minutes)



	connect	mobile	total
Nb rentals	791.0000	938.0000	1,841.0000
Baseline cancel rate	0.1530	0.0906	0.1191
Cancel rate	0.1462	0.0911	0.1175
Cancel rate diff	-0.0067	0.0005	-0.0016
Baseline cancel nb	121.0000	85.0000	206.0000
Cancel nb	115.6771	85.4773	201.1544
Cancel nb diff	-5.3229	0.4773	-4.8456



Thanks!

