

Car Sharing? Volvo. START HACK 2019

ST.GALLEN, THE DAY CAR SHARING BECAME VOLVO 2019



Google for Search Engines

Volvo for Car Sharing



**THE PERFECT MARKET.
UMPA.
NUDGING.**



Who stands before you today?



Tetyana Drobot



Julian Leopold



Eugenia Collovà



Sebastian Kuhn

Agenda

FIRST

PROBLEM

SECOND

SOLUTION

THIRD

WHY IT WORKS

FOURTH

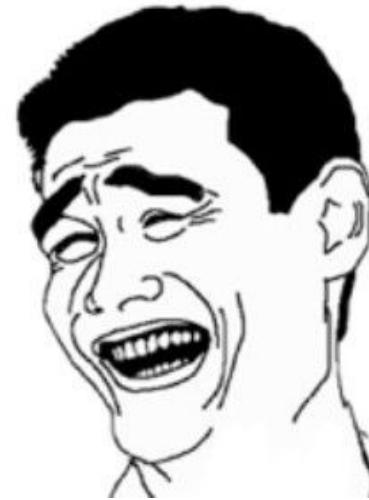


OUTLOOK

FIRST

PROBLEMS

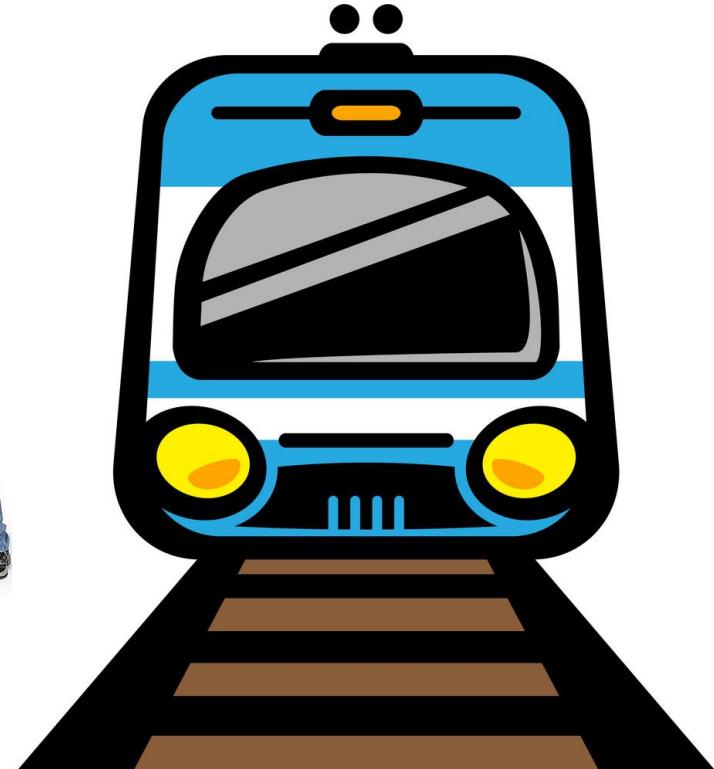
PARKING... in the City



OWNING A CAR... In The City



NEEDING A CAR... In The City



SOLUTION



Car Sharing in.... (a safe playground) **WOHN-GENOSSENSCHAFTEN** in Zürich

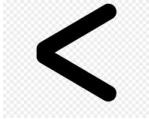
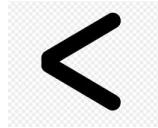
20% der Mietwohnungen in
Wohngenossenschaften



ASSUMPTIONS & Model

- App is maintained by Volvo
- Cars are owned by Volvo and rented to a network of property managers
- Clients are the flat inhabitants (Zurich based, Yuppies, Students)

Cost Structure:



Volvo (1)

Production/Maintanance
Renting Income
Accounting Profits!!

Property Managers(178)

Renting Costs/infrastructure
Operational Income

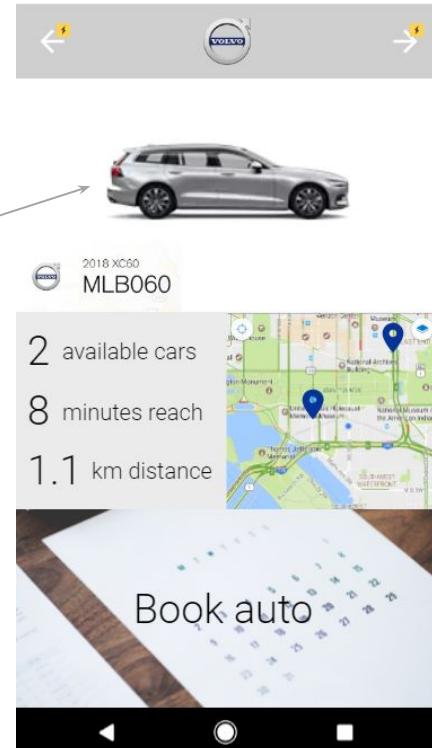
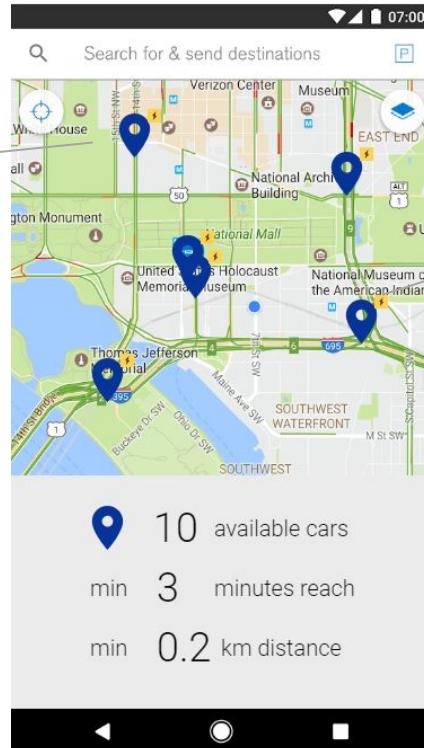
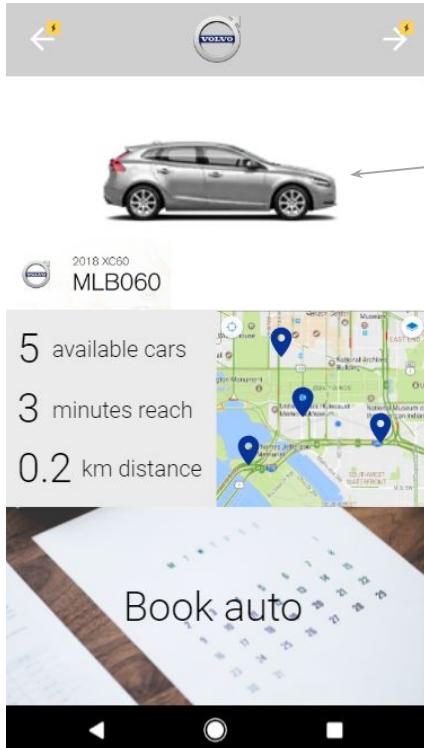
Clients (min 12000 Fam)

Usage Costs
(next slide)

Own Car

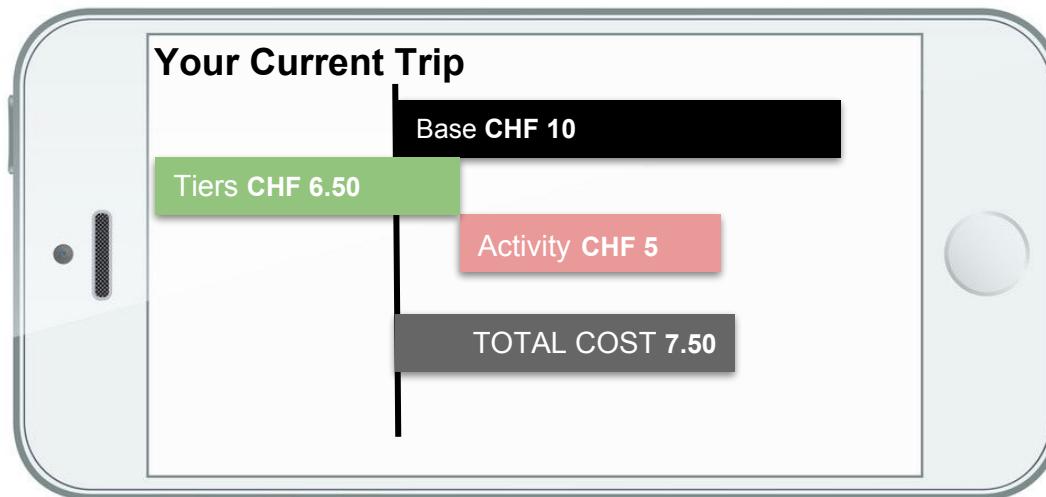
CHF 10'363
(OP: 35'000, MPA:15'000)

App-Booking



UMPA

USAGE MAXIMIZING PRICE ALLOCATION



THREE Components

```
def usage_price(
```

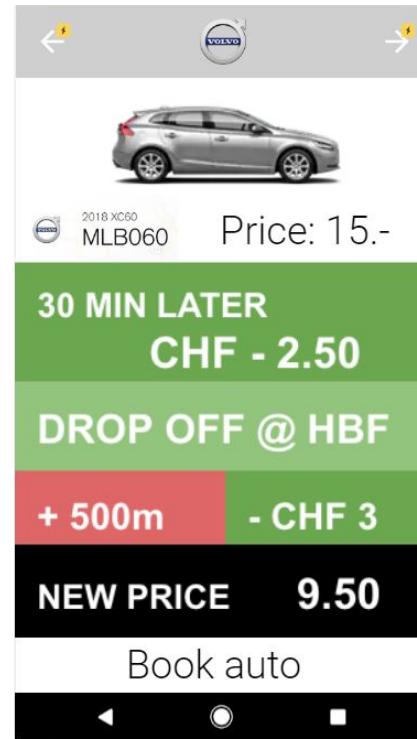
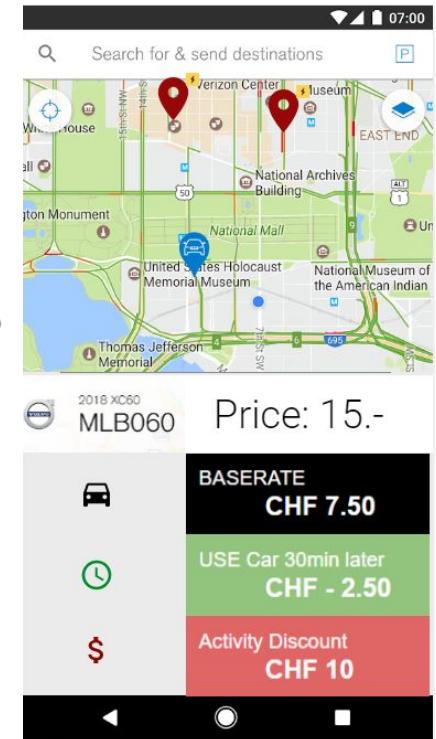
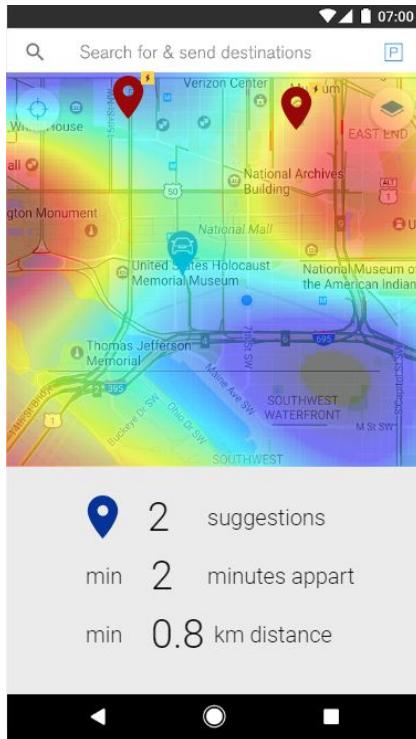
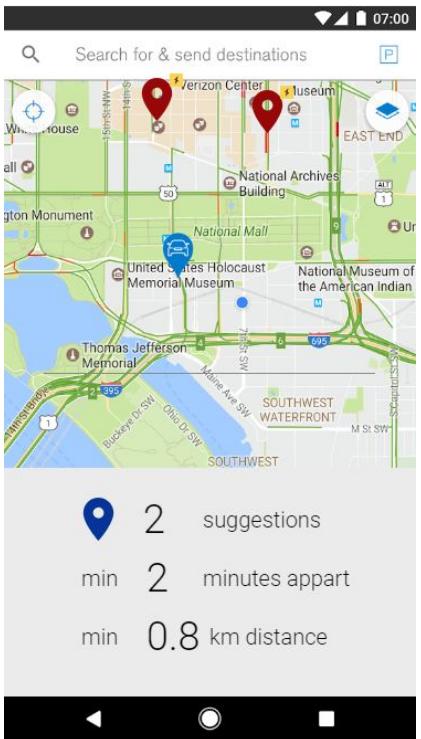
```
    base_rate(starting_point,  
    end_point, pickup_time,  
    trip_type, car_type, ...),
```

```
    location_tier_premium(starting  
    _point, end_point),
```

```
    activity_discount(  
        expected_request_number(pickup_time))
```

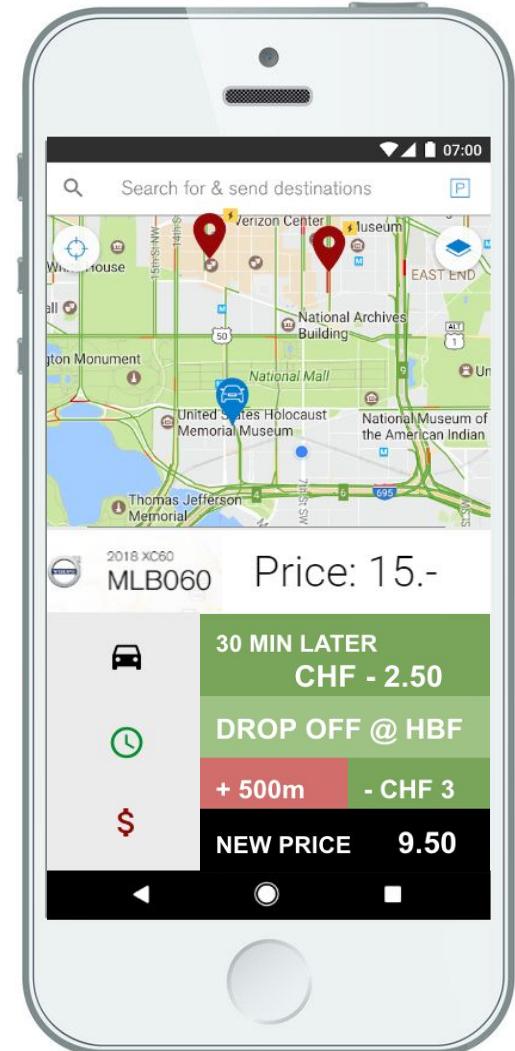
```
)
```

APP-Pricing



NUDGING

Incentivise users to bring the car to the next client



BRACE YOURSELVES SELF-DRIVING CARS ARE COMING

**A new model of car ownership
is upon us.**

BE READY



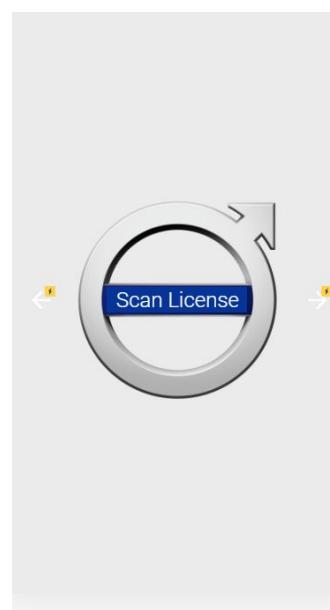
GET A



GO PLACES



App-Registration



App-Forms



Document Verification

National ID

ID Number: _____

Issue Date: _____

Valid till: _____

Driving License

License: _____

Type: _____

Issue Date: _____

Valid till: _____

Verify

◀ ○ □



Personal Information

Name: _____

Surname: _____

Date of Birth: _____

Street: _____

Post Code: _____

City: _____

Country: _____

Telephone: _____

Mobile: _____

E-mail: _____

Verify

◀ ○ □



Payment Information

Credit Card

Card Number: _____

Card Holder: _____

Valid till: _____

CVC: _____

Verify

◀ ○ □



Insurance Agreement

General Terms and Conditions

1. Scope and conclusion of agreement

1.1. Subject of these GTO is the use of services that nine provides or offers to its customers (hereinafter called the "Customer").

1.2. The Customer consents to these GTO by using the respective services. Using a service includes, in particular, activating a product made available to the Customer in nine's customer portal (hereinafter called the "Customer Cockpit").

1.3. For purposes of using individual services, the Customer may be requested to consent to the GTO again by activating the appropriate check boxes. In such cases, the Customer must accept the GTO available to the Customer along with the relevant documentation by mail or electronically (via email or link). In this case, the Customer gives his consent to the GTO by confirming the offer, using the service or paying the invoice; the agreement is formed through whichever of these actions occurs first in time.

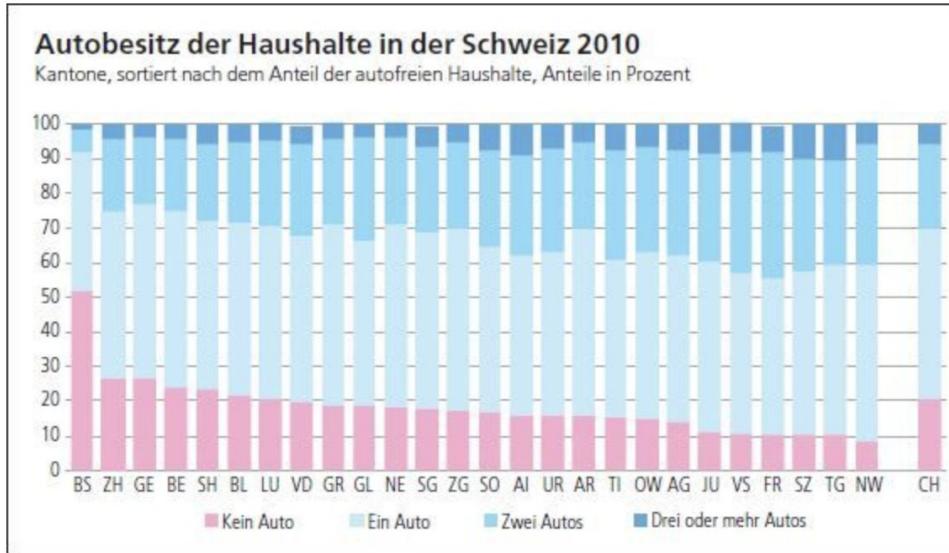
2. Invoicing and payment terms

The duty to pay for services begins upon entry into the agreement (cf. section 1), nine will normally bill the Customer in advance for the selected contractual term in each case. Unless the invoice form specifies otherwise, the invoice must be paid within 20 days, and the stated prices are net prices (excluding VAT).

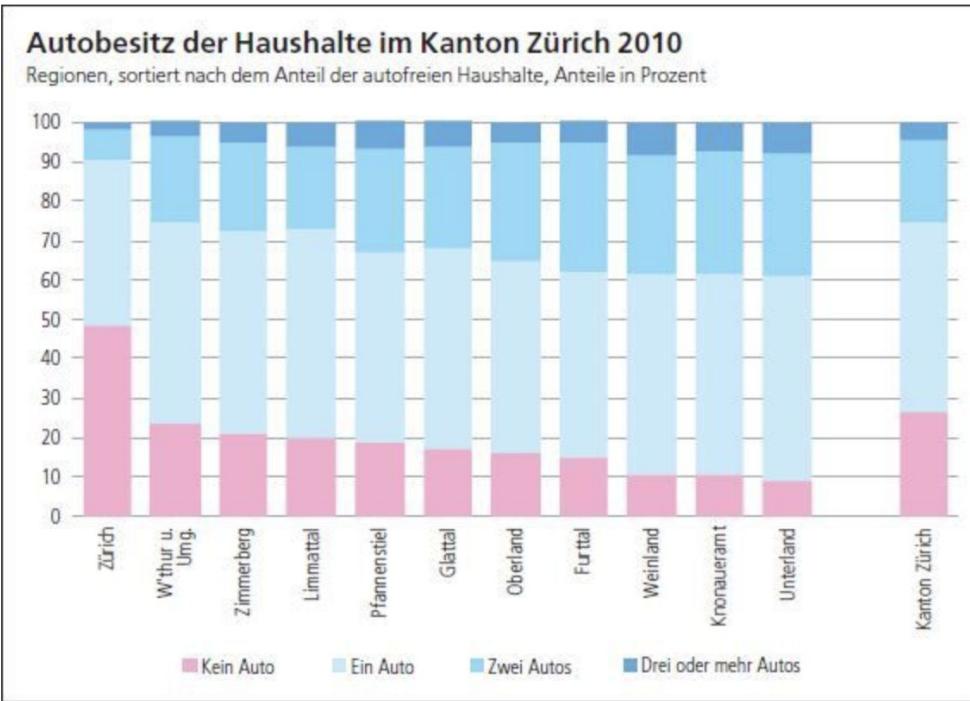
I agree

◀ ○ □

Additional Infos



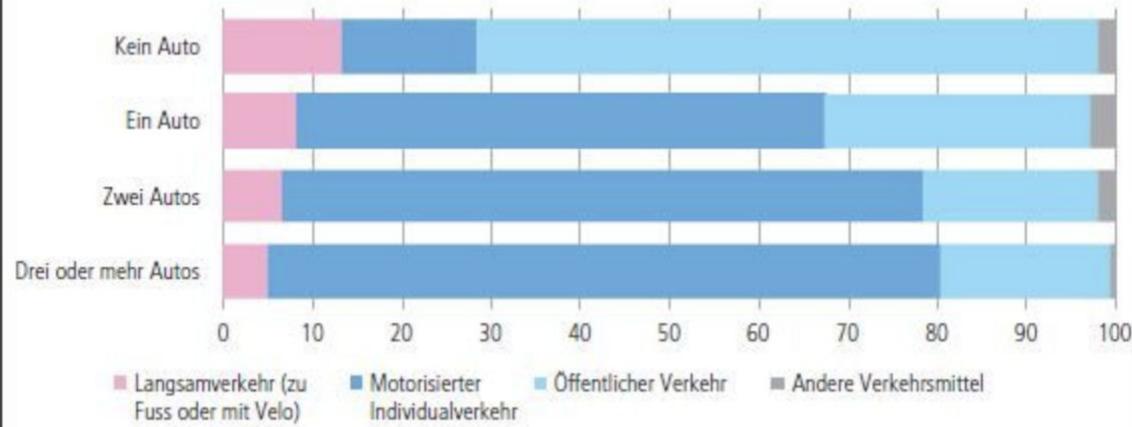
Rund 25 Prozent der Haushalte im Kanton Zürich haben kein Auto. Damit belegt Zürich, hinter Basel-Stadt und gleichauf mit Genf, Platz zwei auf der Rangliste der Kantone mit den meisten autofreien Haushalten.
Quelle: BFS/ARE, Mikrozensus Mobilität und Verkehr 2010.



Knapp die Hälfte der Haushalte in der Stadt Zürich hat kein Auto. Quelle: BFS/ARE, Mikrozensus Mobilität und Verkehr 2010.

Verkehrsmittelwahl der Bevölkerung nach Autobesitz des Haushalts 2010

Kanton Zürich, Anteile der Verkehrsmittel an der jeweiligen Tagesdistanz (Strecken im Inland), in Prozent



Zürcherinnen und Zürcher, deren Haushalt autofrei ist, legen im Schnitt rund 70 Prozent ihrer Tagesdistanz mit öffentlichen Verkehrsmitteln zurück. Quelle: BFS/ARE, Mikrozensus Mobilität und Verkehr 2010.

3 Main Target Groups

Families

- Routinised schedule
- Frequent usage
- Special Tools (chairs, etc)
- Preference over public transport

Students

- Occasional usage
- Long term planning
- Large cars / Transportation
- Price sensitive

Businessman

- Frequent usage
- Urgent / Short term travel
- Premium class cars

Predictability

Difficulty

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Predictability

Difficulty

SECOND

SOLUTION

Mock-up demo



THIRD

WHY IT WORKS?

Pricing Model



Call Volvo!



Q&A



FIRST

Machine Learning in a Nutshell

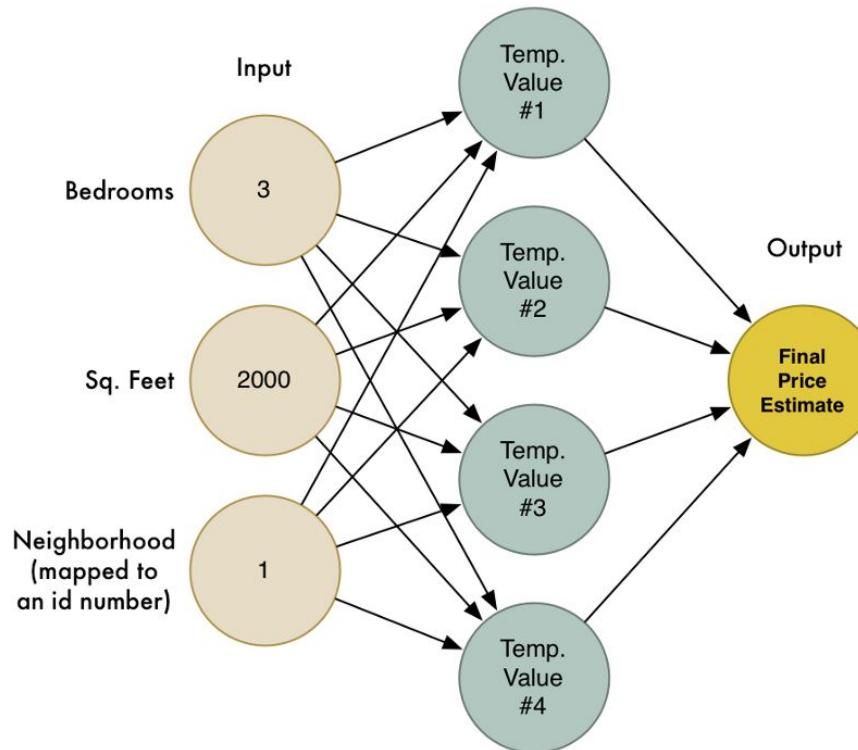
A machine learning algorithm is an algorithm that is able to learn from data:

“A computer program is said to learn from experience E with respect to some class of tasks T and performance measure P , if its performance at tasks in T, as measured by P, improves with experience E .” [Mit97]

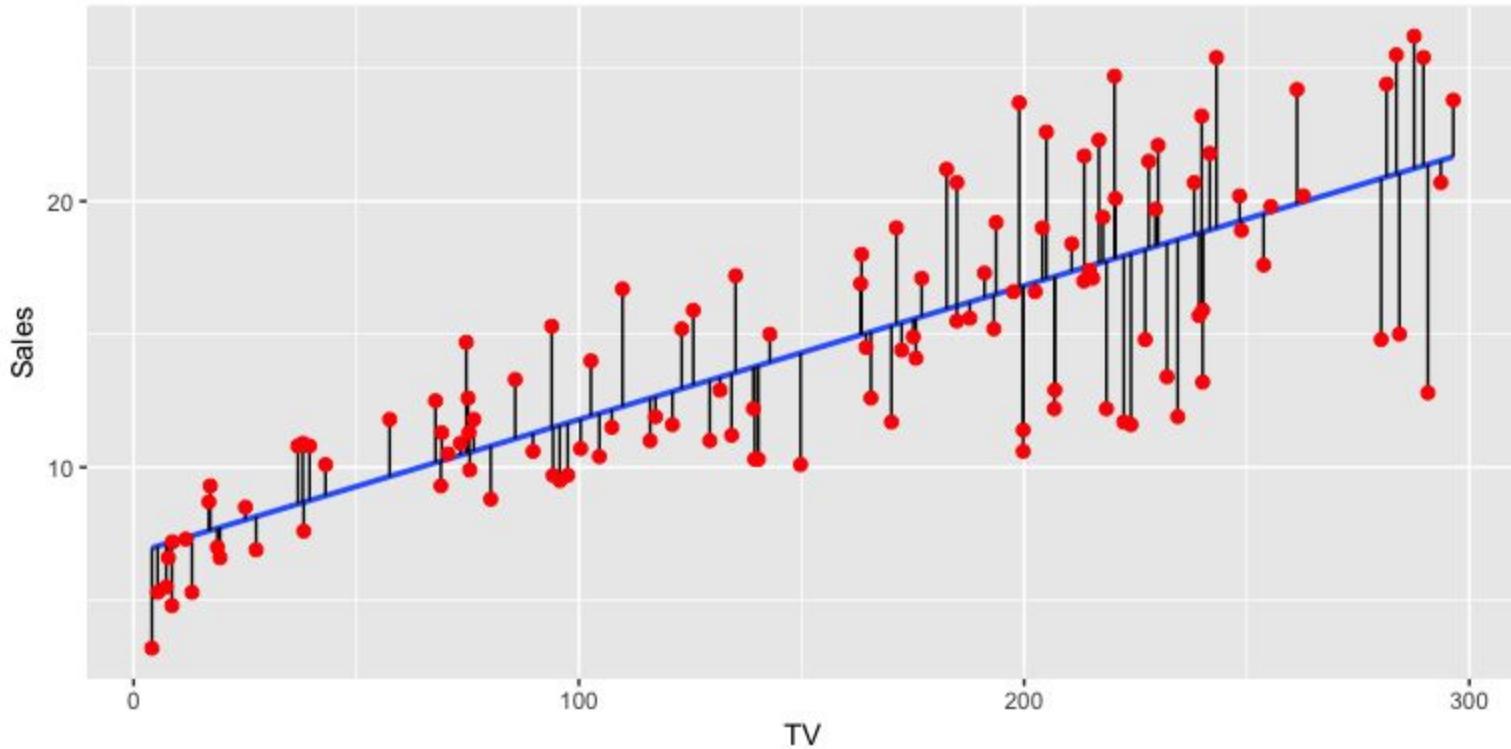
Three ingredients:

- Experience E: data
- Task T: forecasting, classification, clustering
- Performance P: measured using a cost or error function

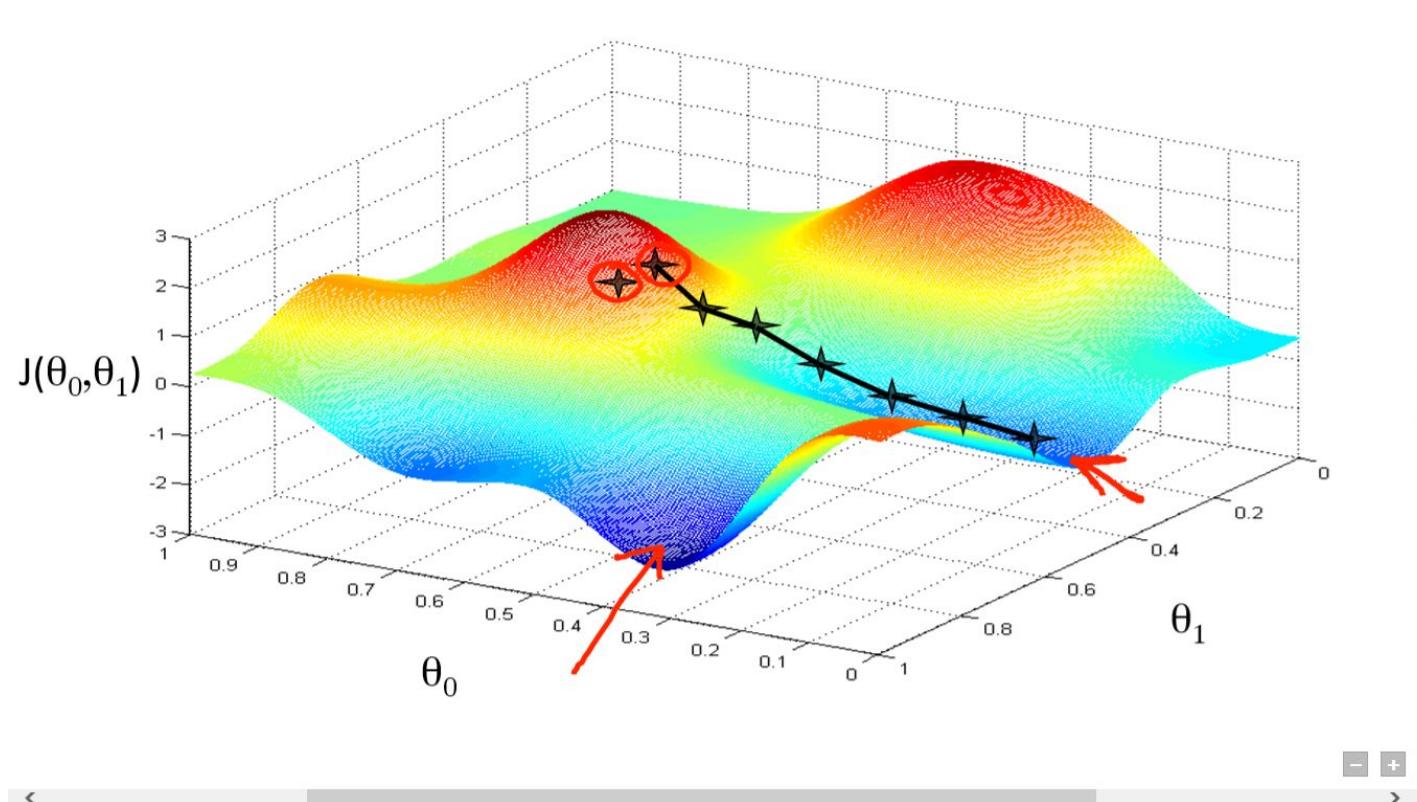
Weights - Memory of an Algorithm



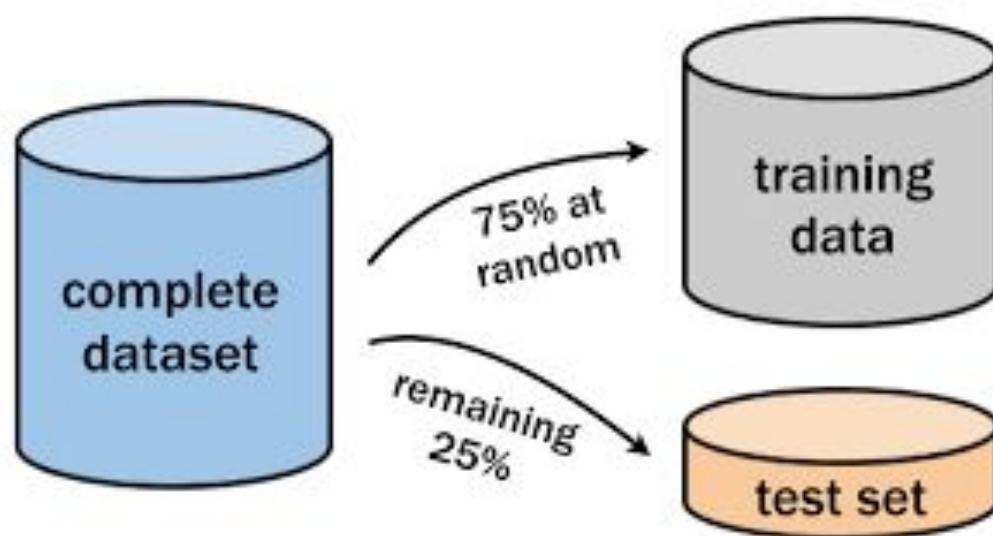
Prediction and Error

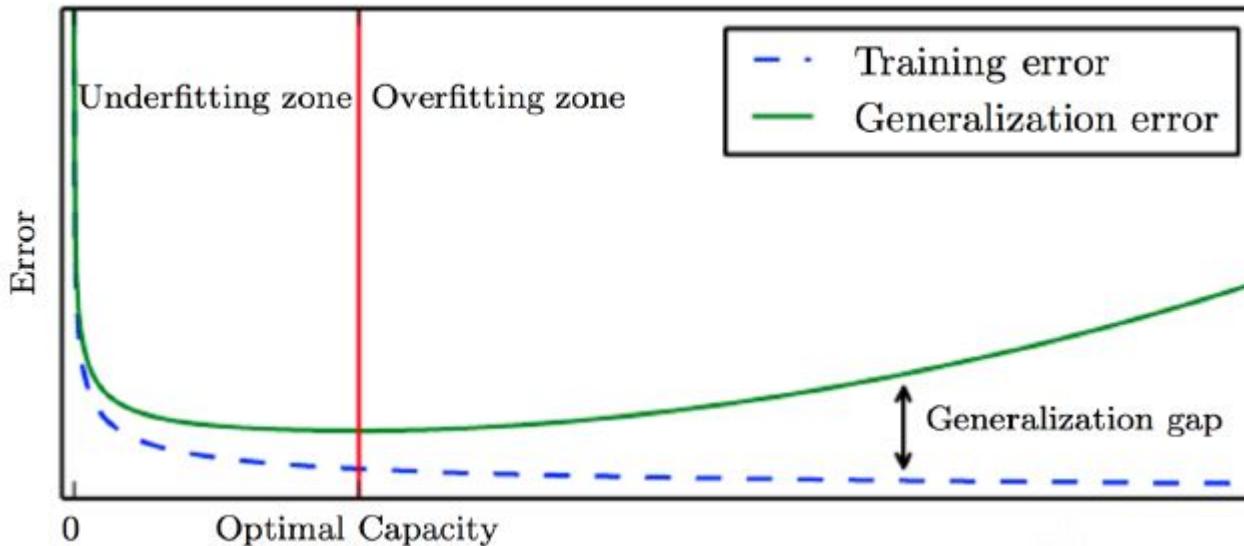


Cost Function - Gradient Descent



Test and Training Data

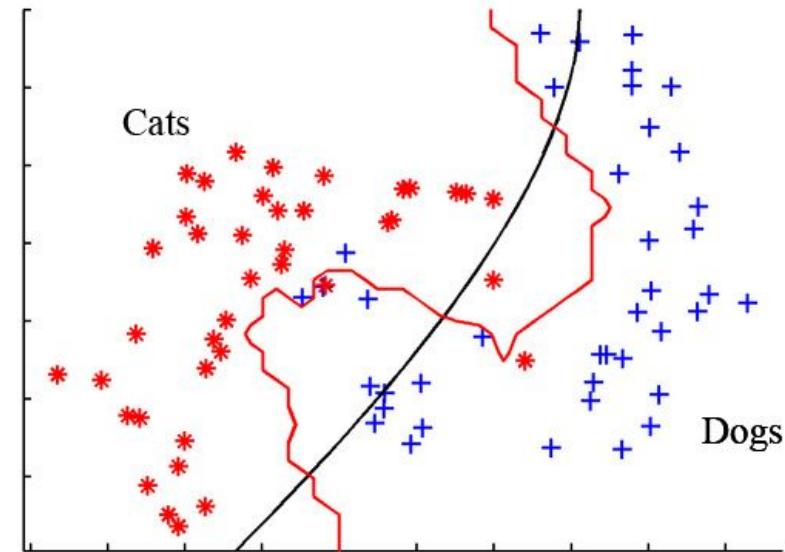




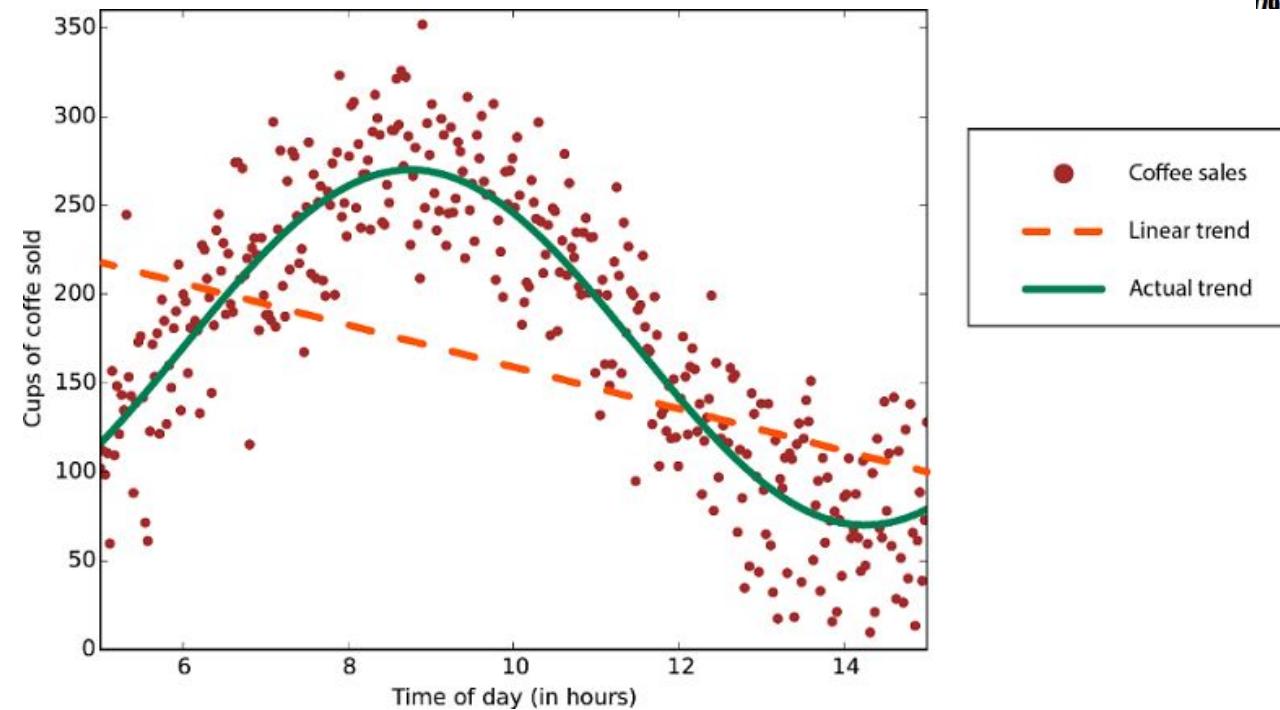
Classifier - Cats or Dogs



Labeled Data
Supervised Learning



Prediction - Coffee Sales

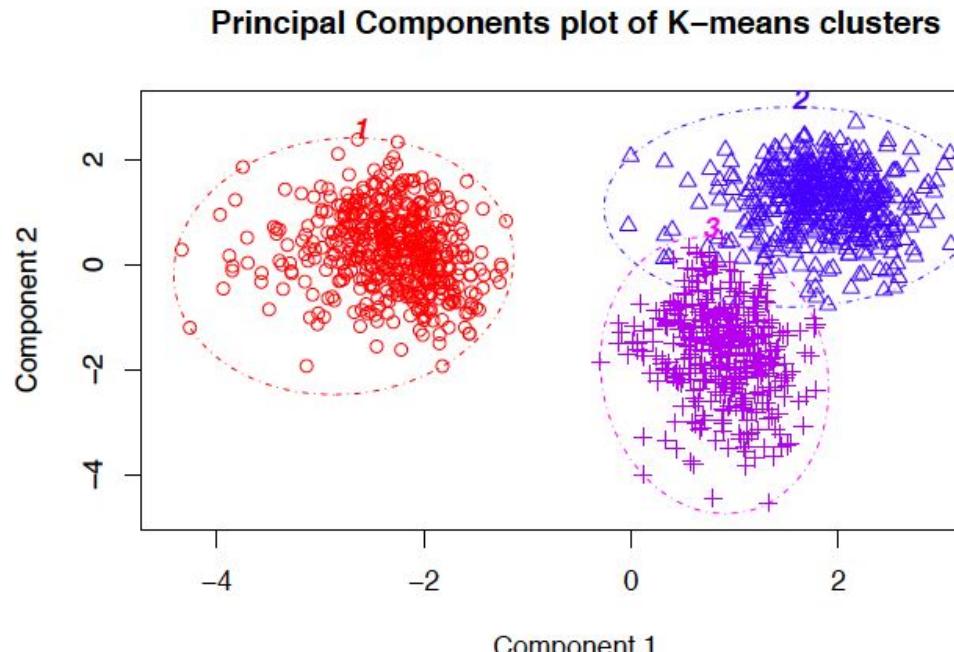
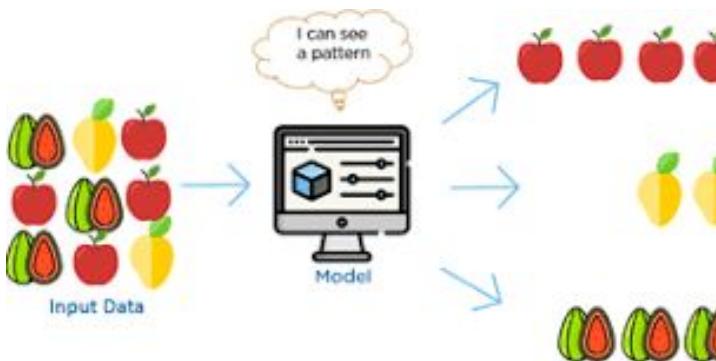


	EB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT
425	2,507	2,088	3,117	2,347	3,019	3,186	2,881	2,58	
210	1,478	1,548	1,684	1,777	2,020	2,511	1,394	1,43	
041	1,452	1,741	2,692	1,571	1,371	818	353	479	
400	1,300	1,100	1,000	1,800	800	600	2,500	1,30	
70	899	743	1,342	1,939	1,226	1,222	640	686	
	610	525	782	988	831	1,050	677	644	
	0	0	336	358	363	1,025	1,022	1,159	
	186	203	206	278	298	208	182	150	
	177	116	177	197	198	264	176	186	
	166	152	167	166	119	166	137	140	
	73	69	149	91	68	228	125	97	
	81	61	52	97	188	196	111	152	
	108	97	182	85	128	80	51	58	
	58	60	59	144	60	60	60	67	

Clustering - Some Similarities

Unlabeled Data

Unsupervised Learning



These two components explain 78.25 % of the point variability.

FIRST

Common Use Cases

- **Predicting the best retail location**
- **Detecting Insurance Fraud**
- **Recommender Systems (Spotify, Netflix, Instagram, Zalando)**
- **Market Basket Analysis**
- **Target - Pregnancy Prediction**
- **Customer Sentiment Analysis**