



A CAREER IN MAKING INFORMATION OUT OF DATA

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Chief Digital Officer

RepairSmith by AutoNation

A BIT ABOUT ME: ACADEMICS

- BMath Waterloo – Double Major Applied Math & Statistics
- Institute for Improvement in Quality and Productivity (IIQP)
- MMath Waterloo – focus - Statistical Process Control
- PhD Math McMaster
Thesis topic – Multivariate Latent Variable Regression: Modelling and Estimation
- Post Doctoral Fellowship – McMaster Chemical Engineering / McMaster Advanced Control Consortium (MACC)



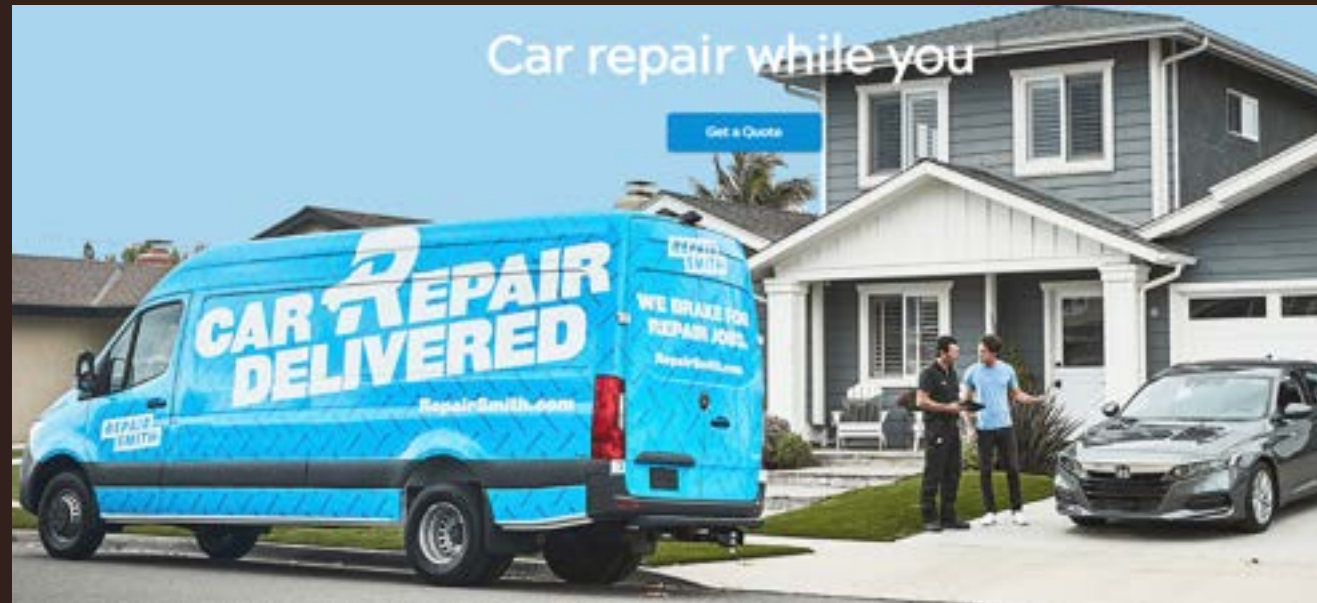
JOB TITLES OVER THE YEARS

- *Quality Control Supervisor*
- *Mathematician*
- *Risk Analyst*
- *Value Management Architect*
- *Director, Value Management*
- *VP, Pricing*
- *Chief Information Officer*
- *Director, Customer Loyalty*
- *VP, Pricing & Analytics*
- *Chief Data & Analytics Officer*
- *Chief Digital Officer*



SOME INDUSTRIES I'VE WORKED IN

- Automotive repair
- Live event ticketing
- Mortgage Insurance
- Banking
- Automotive marketing
- Books
- Fashion
- Shipping
- Basketball
- Currency exchange



WHY SO MANY DIFFERENT TITLES?

As a field the analyzing of data has never really established itself like other STEM disciplines

Chemist

Biologist

Physicist

Engineer

Accountant

Software Developer





STATISTICAL TECHNIQUES

1. Logistical Regression
Credit risk - mortgage default
Marketing - Propensity to buy, propensity to churn
2. K-means clustering
Marketing - customer segments
3. Classification and Regression Trees
Making the customer segments from clustering into something explainable
4. Test of proportions
Web optimization - A/B testing
Marketing - test vs control for binary outcomes
5. Linear Regression
Pricing analysis

BEST PROJECTS: 1 – DANIER LEATHER

Customer segmentation & loyalty program

Data analysis of customer data

K-means segmentation on transactional behavioural variables

CART to determine "business" splits

5 segments profiled – Valerie, Blair, Louise

Loyalty program developed to incent best customers



BEST PROJECTS: 2 - NBA

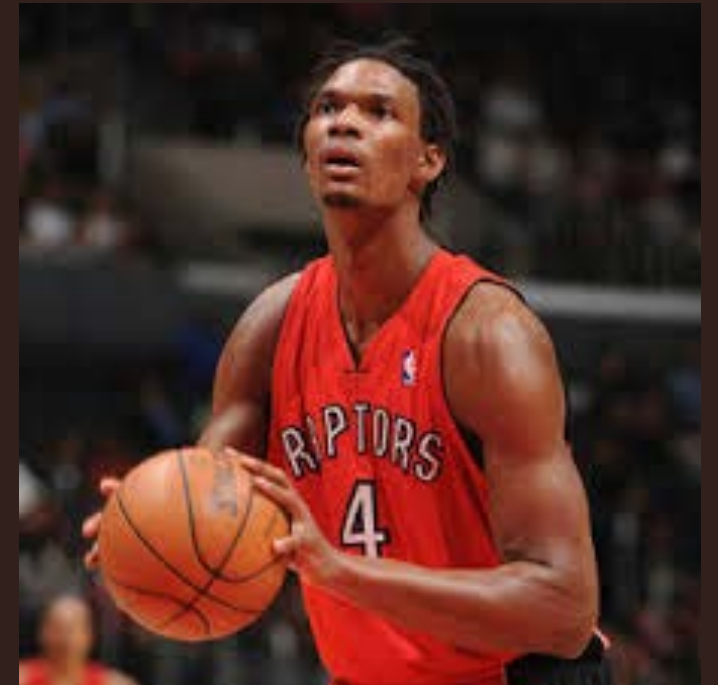
Development of NBA All-Access program

Cross-league program

Customer data from ticket purchases, survey/contest engagement, All-Star voting

Built a large financial model for the program to determine potential ROI

Website & email program



BEST PROJECTS: 3 - SCOREBIG

Reverse Auction ("Name your own price") Live Event Tickets

With company from concept stage

Developed auction logic

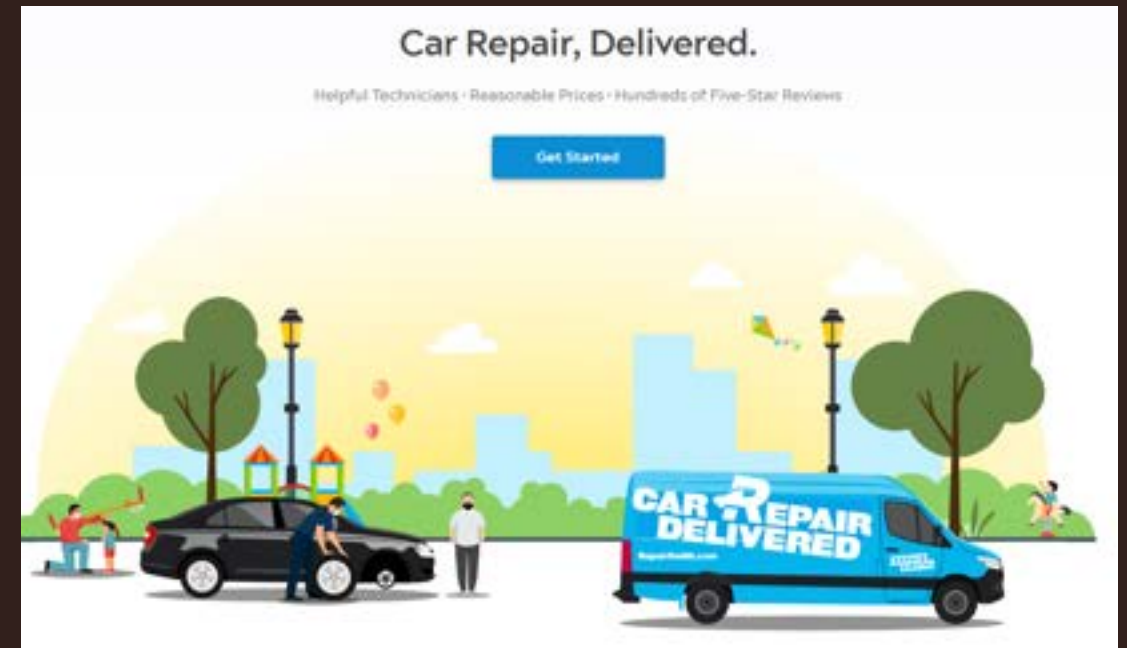
Designed and managed 3 pricing engines

Responsible for Pricing, Data management, Business Intelligence, and Fraud Management



BEST PROJECTS 4: REPAIRSMITH

- Automotive repair is wide open for data transformation
- Not consolidated, not very digital
- OEM questions:
 - What happens to cars after warranty expires?
 - What is the consumer interest in 'original manufacturer parts?'
- New data coming from cars through telematics a big opportunity



FOUR WAVES IN 40 YEARS



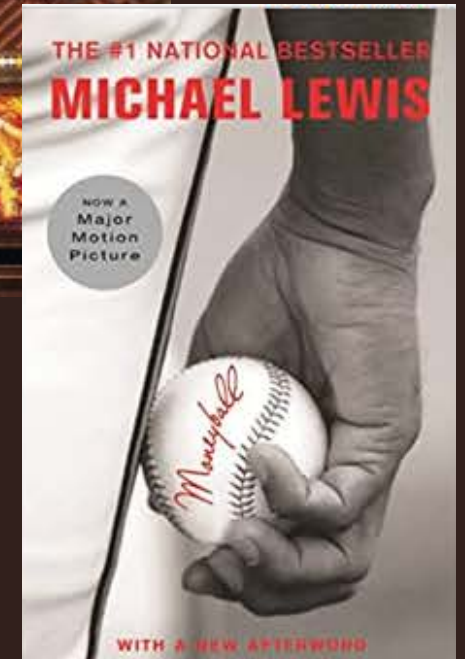
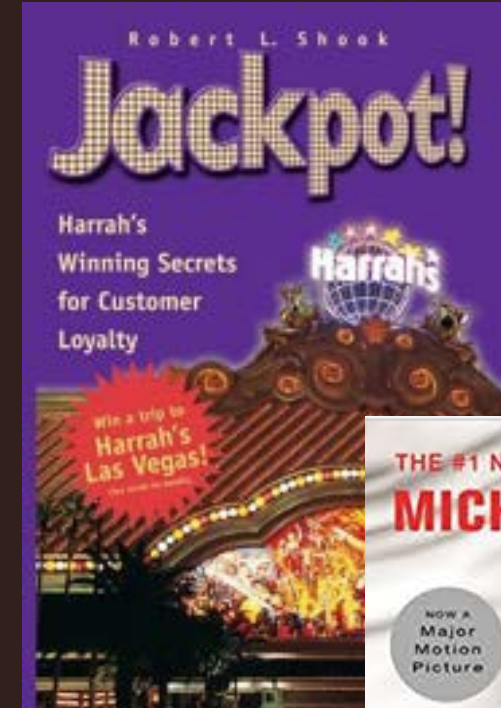
DATA IS EVERYTHING (AND NOTHING)

- As someone who analyzes data you can work
 - in any industry*
 - in any department*
- Which is both a good and a bad thing
- Generally seen as a supporting role rather than core
- Often isolated from the main flow of business
- Often not associated with strong communication skills or business understanding
- Rarely ever represented in the C-Suite



UNTIL NOW

- Chief Data Officer first appeared in the early 2000's but has not 'caught on' outside of very large organizations until recently
- CDO Club (founded in 2011) –
 - 2013 – first Summit just a few 100 people globally held a CDO title
 - Now 1000's of members and summits held all over the globe
- This is the chance to move away from buzz words and into having data analytics and stewardship become a clear discipline
- This also acknowledges the growing role of data in having a successful business (thanks CAPITAL ONE, HARRAH's, GOOGLE, FACEBOOK, OAKLAND A's)



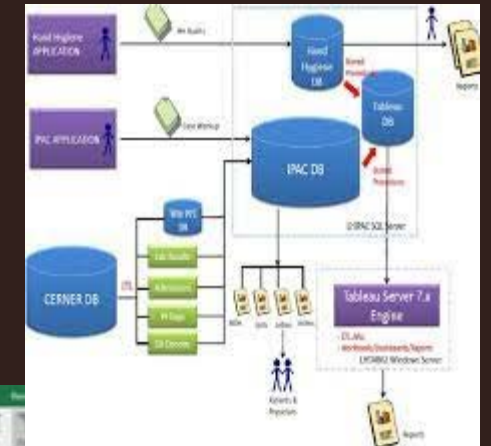
SO WHAT DOES IT MEAN?

Statistics

- The science of analyzing clean, well-defined data to solve well defined problems
- Main thing I took from statistics was an understanding of variation and correlation

Analytics

- Includes cleaning & defining the data
- Includes defining the problem(s) to be solved
- Deep understanding of the business
- Iterative process
- Can use many tools - some statistical, some empirical, some visual



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THE OPPORTUNITY IS HUGE

- We've never had so much data
- Innovative use of data is clearly becoming the edge in business
- In general - 80% of analytics work is not taught in school - it's learned on the job
- Being strong at analytics is quite rare
- Being able to communicate the results and convince people - even rarer



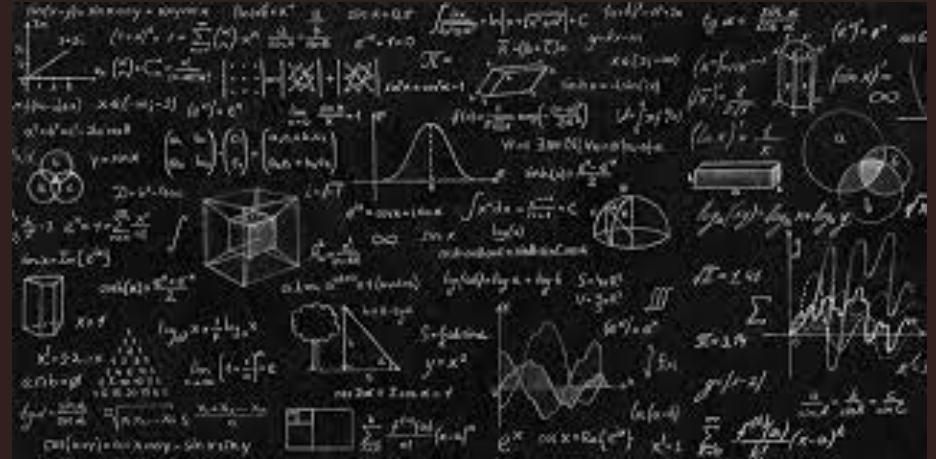
HOW TO SEIZE THE OPPORTUNITY

- Take every chance to learn how your business works at a deep level
 - Take every opportunity to interact with other business functions
 - Get good at listening
 - Ask lots of questions
 - Don't be afraid to ask a dumb question
 - Link questions back to the data you see
- Work on your communication skills
 - A good analyst leaves their teammates feeling smarter not less
 - Take every opportunity to do presentations/ talks on your work
 - Try drama/special interest clubs/forcing yourself to start conversations



ARE TECHNICAL SKILLS NOT IMPORTANT?

- They are – but they're table stakes
- When I advertise for data science roles I get a lot of applicants – I don't see a shortage
- But I do see a shortage of ones who've got solid work experience, and shown they can integrate into a business



A LAST THOUGHT

- Business that success in the future will have to be “data driven” – otherwise they will get replaced by those that are
- There is an opportunity now to really make a difference in a business with data

BUT:

It's hard work

Requires perseverance

It's expensive

Taken for granted



DOES THIS STILL SOUND APPEALING?

- Internships
- Find people who have the jobs you'd like to have one day
- Introduce yourself to them
- Ask them about their careers, how they got where they are
- Find a network of analytical people to be your support system
- Try to find something to enjoy in everything you do – in every ugly dataset is some insight that is new, some answer to a question



QUESTIONS?