AGENDA

• The Recent Buzz
• How does it apply to my company?
• Machine Learning in Marketing
• Summary
THE RECENT BUZZ ABOUT MACHINE LEARNING
**RECENT BUZZ**

**HIGH PROFILE EVENTS IN MACHINE LEARNING**

**Robots**

**Advances in the real world**

**Man vs Machine**

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Reinforcement Learning
Real time data from environment
Self Learning with experience

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Deep Learning
Very Large Neural Networks

(Ensemble Models
Many models combined)
RECENT BUZZ

PEOPLE INVOLVED IN MACHINE LEARNING

Demis Hassabis
Google (Deepmind)

Yann Le Cun
(Facebook)

Andrew Ng
Baidu (Ex Google)

“Artificial intelligence could end mankind”

Steven Hawking

“Building intelligent machines is like summoning the demon”

Elon Musk
RECENT BUZZ

WHY HAS IT HAPPENED NOW?

It’s all about scale.
HOW DOES THIS APPLY TO MY COMPANY?
"Modern" Statistics (Bayesian & Classical). Regression Analysis.

Basic Machine Learning – Decision Trees & Neural Nets

Advanced Machine Learning
Deep Learning ***
Ensemble Modelling
Reinforcement Learning
Support Vector Machines

Advanced Statistics
Regularized Regression (Lasso)
Naïve Bayes

Super Advanced Machine Learning
Deep Reinforcement Learning ***
“Modern” Statistics (Bayesian & Classical). Regression Analysis.

A few niche applications

Sweet Spot Today Big Data Analysis

For non-big data analysis

Basic Machine Learning – Decision Trees & Neural Nets

Advanced Machine Learning
Deep Learning ***
Ensemble Modelling
Reinforcement Learning
Support Vector Machines

Advanced Statistics
Regularized Regression (Lasso)
Naïve Bayes

Super Advanced Machine Learning
Deep Reinforcement Learning ***
THERE ARE OTHER CONSIDERATIONS!!

- People
  - Marketing manager
  - Marketing analyst
  - Marketing scientist
  - IT manager & staff

- Process
  - Integrate & prepare data
  - Explore data & develop models
  - Explain results & share insights
  - Deploy & monitor models

- Methods
  - Exploration, visualization, reporting, dashboards, and alerts
  - Descriptive and inferential statistics
  - Econometrics and time series forecasting, incl. scenario analysis
  - Data mining and machine learning for predictive modeling and pattern discovery
  - Text mining and contextual analysis
  - Optimization and operations research, incl. network analysis and simulation

- Paradigms
  - Analytics by programming, point & click GUI, or embedded in marketing task GUI
  - Structured, semi-structured, unstructured, & streaming data
  - From manually crafted, artisan to automated factory analytics
  - SAS and open source analytics

- Applications
  - Approachable & actionable analytics
  - Workbenches and business solutions

- Infrastructure
  - Cloud (private, SAS, public) deployment, Hosted (SAS or partner), On-premise (desktop, department, enterprise)
  - SAS analytics and SAS high-performance analytics (grid computing, in-database, in-Hadoop, in-memory)
EXAMPLE 1 - ADVANCED MARKETING ATTRIBUTION

- ADVANCED MARKETING ATTRIBUTION
- DATA-DRIVEN ATTRIBUTION

- CHAMPION/CHALLENGER MODEL SELECTION

Big Digital Data
- Champion – Challenger
- Modeling
- Asses
- Select Champion
- Attribution Scoring & Channel Weighting

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HITS are summarized by ID.

Each HIT ultimately becomes an ID.
Each ID becomes a Champion or Challenger.
MACHINE LEARNING IN MARKETING

ADVANCED MARKETING ATTRIBUTION

DATA-DRIVEN ATTRIBUTION

CHAMPION/CHALLENGER MODEL SELECTION

ADVANCED MARKETING ATTRIBUTION

ID | HIT (CLICK) | COUNT
---|-------------|------
1  |            | 4
1  |            | 7
1  |            | 12
2  |            | 11

ID 1: New and Best 
ID 2: New and Not Best 
ID 3: Old and Best 
ID 4: Old and Not Best 
ID 5: New and Not Best 
ID 6: Old and Not Best

Champion – Challenger
Modeling: 
Assess: 
Select: 
Attribution Scoring & Channel Weighting

Tournament of Algorithmic Alternatives

Big Digital Data

Each ID becomes a Big Digital Data

Each HIT ultimately becomes a Big Digital Data
SUMMARY

5 MAIN TAKEAWAYS

SUMMARY

5 MAIN TAKEAWAYS

MACHINE LEARNING IN YOUR COMPANY

- Data
- Big Data

Basic Machine Learning – Decision Trees & Neural Nets

"Modern" Statistics (Bayesian & Classical), Regression Analysis.

Super Advanced Machine Learning
Deep Reinforcement Learning

Advanced Machine Learning
Deep Learning
Ensemble Learning
Reinforcement Learning
Support Vector Machines

Advanced Statistics
Regularization Regression (Lasso)
Naïve Bayes

Delighting customers every step of the way with personalized experiences

UNDERSTAND THE CUSTOMER:
With approachable Big Data Analytics

DECISION: Recommendations, pricing, buying, search, personalization, customer insights that are personalized for Customer and Individual Within Outcomes

CUSTOMER EXPERIENCE:
Reliable, accessible, easy, suggestions and recommendations

WORLD CLASS DIGITAL RETAILER
Putting customers at the heart of what we do

SAS MARKETING ANALYTICS

THERE ARE OTHER CONSIDERATIONS!!

- Cloud private, SAS, public deployment, on-premise or a hybrid
- End-to-end analytics in marketing (Go to Market)
- Structured, semi-structured, and unstructured data
- Customer/only, customer/employee
- Real-time/real-time
- SAS and open source analytics

Thank you very much!
Free SAS Tutorials
http://support.sas.com/training/tutorial/#s1=4

SAS Communities
https://communities.sas.com/

SAS Software Information Pack
SAS Technical Support Form

1. Basic Information
   Use this form to create a track with SAS Technical Support. Click here to update an existing track.

2. Problem Description
   Before you proceed you should:
   - Report critical problems by telephone
   - Verify that any SPAM software on your machine will not block our e-mail responses

Shortly after you submit the form, you will receive an automatic e-mail that:
   - Confirms that you have submitted the form successfully
   - Provides a tracking number that has been assigned to your e-mail request

After you supply the basic information, click Next Page to proceed. Otherwise click Reset to start over.
• [www.sas.com/uk/usergroups](http://www.sas.com/uk/usergroups)
• Webinars – Visual Analytics and Enterprise Guide
• Face to Face – Data Management, Platform Admin, Enterprise Miner
• 14 – 16 June 2016
• Birmingham
• Speakers needed!
• Watch your inboxes for further information
THANK YOU!