From School to Industry, Data Science at SEB Analytics

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Since the Wallenberg family founded SEB in 1856, we have been working in the service of enterprise. The journey continues with the vision to deliver world-class service to our customers. The Wallenberg family is still the main shareholder via Investor AB.
Our Customers

3,000
Large Corporations and Financial Institution

400,000
SME Customers

4,000,000
Private Customers

We are well positioned to serve corporate customers from the Nordic countries, United Kingdom and Germany around the globe, e.g., New York, London, Beijing and Singapore.

We want to be where our customers do business.
Speed of Transformation is Accelerating
SEB Analytics

Large Corporations & Financial Institutions

Corporate & Private Customers

Life & Investment Management

Group Staff & Control Functions

SEB Analytics

SEB IT Department
Big Data Engineer Team
From University to Industry

2011
- PhD student in signal processing at KTH
  - Decentralized hypothesis testing
  - WSN application
  - MATLAB, C
  - Research and teaching

2016
- Data scientist at Combient
  - PySpark
  - Big data tools and platform
  - Apache Hadoop

2018
- Senior data scientist at SEB
  - Supervision and teaching
  - Meetings and talks

Skills:
- Python, SQL, R
- Machine learning (UU/Coursera)
- Data science
- Kaggle
- GitHub

Languages:
- Math & Statistics
- Hacking Skills
- Finance & Banking
From Idea to Deployment

- Business need
- Data availability
- Data science and modelling
- Data engineering
- Deployment
Aida: Virtual Assistant at Customer Service
Chatta med oss

I den här chatten får du hjälp av Aida, vår digitala medarbetare med artificiell intelligens. Genom att svara på dina frågor blir hon bättre på att hjälpa dig.

Aida: Virtual Assistant

- SEB implemented IPsoft Amelia (Aida) as virtual assistant
- Aida can answer questions in different areas and she escalates conversations that she cannot handle
- A neural network decides about conversations
- At SEB there is a team (CoE Aida) responsible for training Aida with new knowledge
- The team studies her performance (customer satisfaction, etc)
Aida: Virtual Assistant

- SEB implemented Aida in 2016
- She was handling 200 conversations daily
- Four people in CoE Aida team had to spend considerable amount of time to manually study conversations:
  - Extract features, e.g., customer utterance
  - Classify conversations, e.g., customer satisfaction
- Is it a scalable solution?
Classification of Customer-Aida Chat

Business need:
• Classify conversations between prospect customers and virtual assistant
• Reduce cost and scale the Aida solution
• Know customers needs asap

Data:
• Manually classified conversations by CoE team
• Data in csv and json
Classification of Customer-Aida Chat

Data engineering:
- Apache Hadoop cluster
- Pyspark, python
- NLP, Scikit Learn, etc
Methodology

- Train data
- Test data
- Conversations
- Labels
- Feature Extraction
- Vectorised Features
- Labels
- TfidfVectorizer

- Time
- Escalation
Methodology

Conversations
Feature Engineering
Labels

Conversations
Vectorised Features
Labels

Gradient Boosting

Logistic Regression

Train
Test
Accuracy
90%
84%
Deployment

• The developed model is then deployed to the Production Data Lake, by Big Data Engineers

• Every new conversation is fed to the ML model and it generates this new feature

• CoE people can get the results daily through Tableau dashboard
Next Steps

• Swedish conversation classification using neural networks

• Master thesis student from KTH royal institute of technology

Advanced Analysis at SEB

Education–Research

Innovation–Partnership–Investment

Guidelines–Technology–Infrastructure
Industrial PhD Student at KTH

WASP Industrial Doctoral Student

Generative Models and Reinforcement Learning for Limit Order Books

Hanna Hultin

The WASP AI project has been approved by the Emerging Technologies Committee at SEB, which includes the CIO, CRO and the Head of Trading.
Thank you for your consideration
The Journey Towards...

...World-Class Service to Our Customers Continues