The Hype and Reality behind Intelligent Automation

Data, the life-blood of Intelligent Automation & AI – Beware of the “dark side”?

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Data as the life-blood of artificial intelligence

- Data is the “fabric” of digital transformation
- Insights generated from data drive emerging technology trends including intelligent automation
- The amount of data available is growing rapidly. Enterprises must transform from simply owning data to sharing, managing, utilizing data
Data as raw material for intelligent automation

- Enhance decision-making
- Improve coordination across business functions
- Increase transparency
- Maximize operational efficiency
- Autonomy

- Reduce cost
- Maximize efficiency
- Boost productivity and employee satisfaction
- Boost service quality and customer satisfaction
- Achieve competitive advantage
What about unstructured data?

→ **80 percent** of enterprise data is unstructured (documents, images, social media, videos, logs, etc.) and untapped for its value (**dark data**)

→ Structured data analytics describes and explains **what’s happening**, while unstructured data analytics can explain **why it’s happening**

→ By 2020 organizations that analyze both structured and unstructured data to deliver actionable information will achieve an **extra $430 billion in productivity** over competitors that do not perform such data analysis (Source: IDC)

→ Artificial Intelligence / machine learning and high performance / cloud computing make it **possible and affordable** to find meaning in vast amounts of unstructured data (images, vision, speech, social, documents, logs)

→ Even unstructured data must be **collected, extracted, refined and transformed** from its raw form into “computationally relevant fuel” before it can power AI infrastructure; **data quality** remains more important than ever
The dark side of AI?

Data ➔ AI (Machine Learning (Deep Neural Nets)) ➔ Insights (Decisions, Autonomy) ➔ Why? (Explainability, Right to an Explanation)

Why?
Examples of sensitive use cases

- Recommendations: restaurants, music, purchases… why?
- Decisions: financial, credit, fraud, AML, watch lists… why?
- Justice: who gets parole… why?
- Medical diagnoses: predicting onset schizophrenia… why? *
- Quality control: predict quality deterioration in steel production… why?
- Self driving / self-learning cars… why? **
- Threat evading drones… why?

Right to an explanation – debated and regulated by EU: GDPR and beyond

* Mt Sinai Hospital NYC, Deep Patient experiment
** NVIDIA, PilotNet self-driving car controller
Salient “objects” visualization for explanation; AI-driven experimental car by NVIDIA (PilotNet system)

Source: NVIDIA, 2017
Google Deep Dream project – reverse algorithm to ‘see’ neural net’s image recognition

Source: Google, 2015
Key takeaways

1. **Data**
   Manage your data as a strategic asset
   - Dissolve data siloes
   - Focus on both structured and unstructured data (dark data)
   - Data management / governance / regulatory compliance
   - Data quality remains important
   - Define your AI use cases

2. **Artificial Intelligence**
   Develop the full spectrum of AI as a core competence
   - Begin with a narrow AI capability
   - Develop AI as a core competence in the organization (centre of excellence)
   - Focus on machine learning, automating decisions, transactions, operations, interactions
   - Experiment on Deep Neural Net challenges

3. **Explainability & Trust**
   Build trust, engineer explainability
   - Work with regulators and industry councils on AI’s deep learning challenges
   - Explainability, XAI
   - Build trust with clients
MIT Technology Review
https://www.technologyreview.com/s/604087/the-dark-secret-at-the-heart-of-ai/

NVIDIA devblog

Information Technology Industry Council (ITIC); AI-Policy Principles
Strategic approach to harness unstructured data for intelligent automation and AI

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<th>IDENTIFY</th>
<th>DECIDE</th>
<th>ORGANIZE</th>
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| • Data driven initiatives depend on identification of clear business use cases  
  • Develop and promote a culture that dissolves data silos into enterprise data management stores  
  • Embrace collection, use, and sharing of structured and unstructured content as a key asset for intelligent decision making | • Decide what data to collect, analyze, and retain  
  • Associate data retention with identified business cases  
  • Align data sources with business goals before embarking on an unstructured data initiative  
  • Reduce data management costs and risk by off-premise cost effective storage of data that is not regularly accessed | • Assure data quality, data provenance, and retain context  
  • Enable formal information handling techniques to create value from unstructured data  
  • Mitigate legal or financial liability by organizing for compliance data covered by mandate or regulation  
  • Secure and audit data stores to mitigate risks to reputation and prevent intelligence leaks | • Mine value from unstructured data and integrate it with more traditional sources  
  • Invest in search, text analytics, visualization, and ETL tools that support mashups of structured and unstructured data  
  • Improve customer/end-user experience using customer comments from social media or customer service-sourced data |
Thank you!