

Why Service Management is embracing Al and Machine Learning

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OR





Agenda

Principles of AI and Machine Learning

Research - Automation, AI, and Analytics: Reinventing ITSM

Applying AI and Machine Learning to Service Management

EMA, Automation, AI and Analytics: Reinventing ITSM, research Summary Report April 2019



Principles of Al and Machine Learning

Terminology

Artificial Intelligence	Intelligence exhibited by machines or software
Machine Learning	Smart programs can learn from examples
Representation/Feature Learning	Transformation of raw data input to a representation
Deep Learning	One architecture to rule them all
Neural Networks (ANNs)	Computing models inspired by biological neural networks
Cognitive computing	Simulation of human thought processes in a computerized model

Most Common Machine Learning Tasks

Classification	Smart Ticket classification
Regression	Smart Change Analytics, Number of Incident projection
Clustering	Hot Topic clustering
Transcription	OCR used in Smart Ticket classification
Machine translation	On the fly translation
Structured output	Sentiment Analysis, User Profiling, Document labelling
Anomaly detection	Major Incident detection
Synthesis and sampling	Text2Voice, Virtual conversation response



Machine Learning Algorithms

Supervised learning	Maps an input to an output based on example input-output pairs.	Virtual Agent Intent training
Unsupervised learning	Infers a function that describes the structure of "unlabeled" data	Hot Topic analysis, Find similar cases, suggest offerings based on past requests with similar descriptions
Semi-supervised learning	Use labelled and unlabeled data for training	Smart Ticketing - automatic training sample selection
Reinforcement learning	Use feedback to the program's actions in a dynamic environment for training	'Helpful' vs. 'Not- Helpful', feedback provided to a Virtual Agent flow



Research - EMA - Automation, AI, and Analytics: Reinventing ITSM

EMA, Automation, AI and Analytics: Reinventing ITSM, research Summary Report April 2019 www.microfocus.com/en-us/assets/it-operations-management/automation-ai-and-analytics-reinventing-itsm

- When you think of AI, what comes to mind?"
- Al/analytics and automation findings
- Obstacles in Al/analytics and automation
- Top Al/analytic initiative



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- 1. Machine learning
- 2. Big data
- 3. Al bots
- 4. Integrated automation
- 5. Virtual agents
- 6. Analytics specific to business performance
- 7. Predictive analytics
- 8. AlOps
- 9. Behavioural analytics
- 10. Asset and cost optimization analytics

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EMA, Automation, AI and Analytics: Reinventing ITSM, research Summary Report April 2019 **Enhanced levels of ITIL adoption** strongly correlated with success in Al/analytics and automation adoptions

IT productivity, cost savings, and increased end-user/customer satisfaction show a strong presence in benefits achieved from AI/ analytics and automation.

Cost savings and OpEx efficiencies across and beyond IT dominated as leading drivers for AI/analytics and automation initiatives.

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EMA, Automation, AI and Analytics: Reinventing ITSM, research Summary Report April 2019 **People** training or skillset issues (e.g., lack of effective skillsets).

Process and procedures issues (e.g., resistance to change) and changes to processes

Technology-specific issues (e.g., lack of integration with current tools), resource issues (e.g., cost budgeting issues) and cultural/political.

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Applying AI and Machine Learning to Service Management

Typical Service Management issues

ISSUE	ROOT CAUSE
Poor end user experience	Asking too much information to "feed the system"
Search hell	No ontology for search
Garbage in – Garbage out	Bad input leads to bad decision
Dark data	Text and attachments not used for analysis
(Not) moving from incident to problem	No problem isolation process
CSI mirage	Service desk "technology platform" instead of semantic layer



Micro Focus's "Three Laws of Al/Machine Learning"

Built as a core capability use case and business outcomes driven

Automated Machine Learning



Our Approach: Machine Learning & the Service Desk

Business outcomes for key stakeholders





User input

Smart ticketing

User improvement

- Reduce the end user input to the absolute minimum, avoid "guess data" required to feed the system
- Infer as much information from user context – autocategorization
- Allow for visual input



Enabling technologies

- Optical Character Recognition (OCR)
- Supervised Machine Learning:
 - Training
 - Testing



Virtual agent

Natural Language Processing with virtual agents

User improvement

- Provide a human-like user interface 24x7
- Get rich contextual and relevant answers to questions, not premade ones

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Enabling technologies

- Machine Learning
- Chatbot
- Natural Language Processing



Search ITSM ontology for search

Agent improvement

- Provide strong typed search
- Pre-built common actions
- Filter search on ITSM artifact types (incident, knowledge, request, ...)



Enabling technologies

Search engine

Semantic layer



Text analysis

Context-sensitive meta-data recognition

Agent improvement

- Automatic recognition of meta-data from text
- Contextual access to process artifacts without re-keying

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Enabling technologies

- Machine learning
- Semantic layer



Text analysis

Text analysis for pattern clustering

Agent improvement

- Identify recurring topics in patterns
- Groups related artifacts to a theme
- Trigger common related actions



Enabling technologies

- Machine learning
- Bayesian algorithm



Prescriptive analytics

Towards prescriptive process improvement

Organizational improvement

- Use of KPI library and related metrics
- Suggest concrete actions to improve process KPIs in defined library
- Assess process performance at varying degrees of granularity



Enabling technologies

- Machine learning
- Semantic layer for process KPIs

HOW CAN YOU IMPROVE?

goal.

Make more of your changes successful by reviewing some of our suggested action points.



Introducing Max!



VIRTUAL AGENT:

TAKE AUTOMATIC TASK



- Reply to frequently asked questions
- Help troubleshoot and solve common problems
- Help end user to fill in offering and support requests

LIVE AGENT:



TAKE COMPLEX TASK

- Resolve complex problems
- Submit requests on behalf of end user
- And more...



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Sampling of AI/ML in SMAX

Smart Ticketing:

- Naive Bayes for Classification
- SVM and Neural Networks for OCR
- Anomaly Detection for Adaptive Training
- Information Theory
- Hot Topics:
 - Naive Bayes for Clustering
 - LDA for Clustering
 - Information Theory
- Smart Search, Smart Email:
 - Naive Bayes

Smart Virtual Agent

- Word-Vector Embedding for Natural Language Modelling
- SVM for Indent Classification
- Naive Bayes for Entity Extraction

CI Detection:

- Naive Bayes
- Information Theory
- CMS Automatic Software Recognition:
 - Naive Bayes for Entity Extraction
 - Gradient Boost Decision Trees for Classification
 - Best Matching Ranking Function for Classification

