



An Artificial Intelligence based approach to detect internal control deficiencies
15th September, 2021

Introduction



GERGŐ BARTA

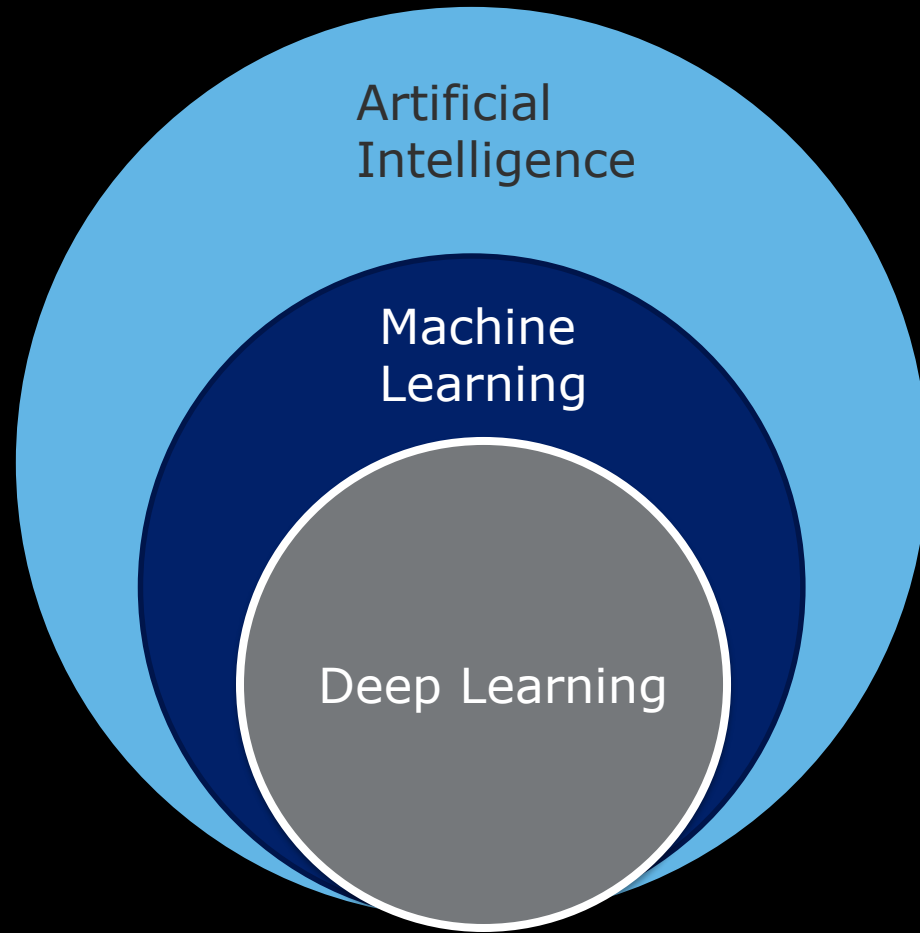
Manager
IT Risk Advisory
Deloitte Hungary

Researcher, PhD candidate
My-X AI research group

contact: gbarta@deloittece.com



Definitions

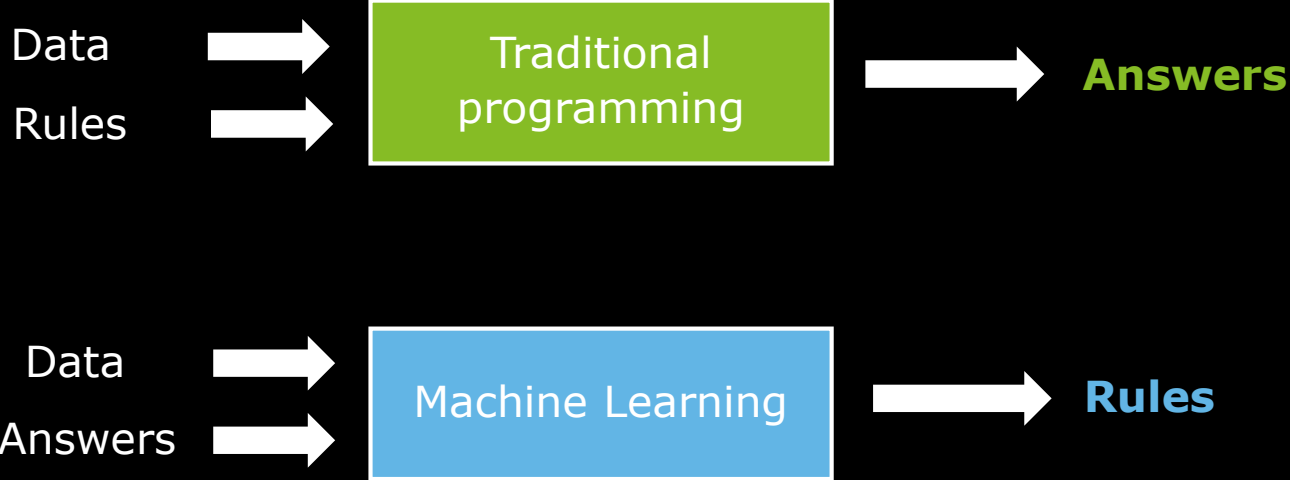


Modelling of human
rationality and thinking

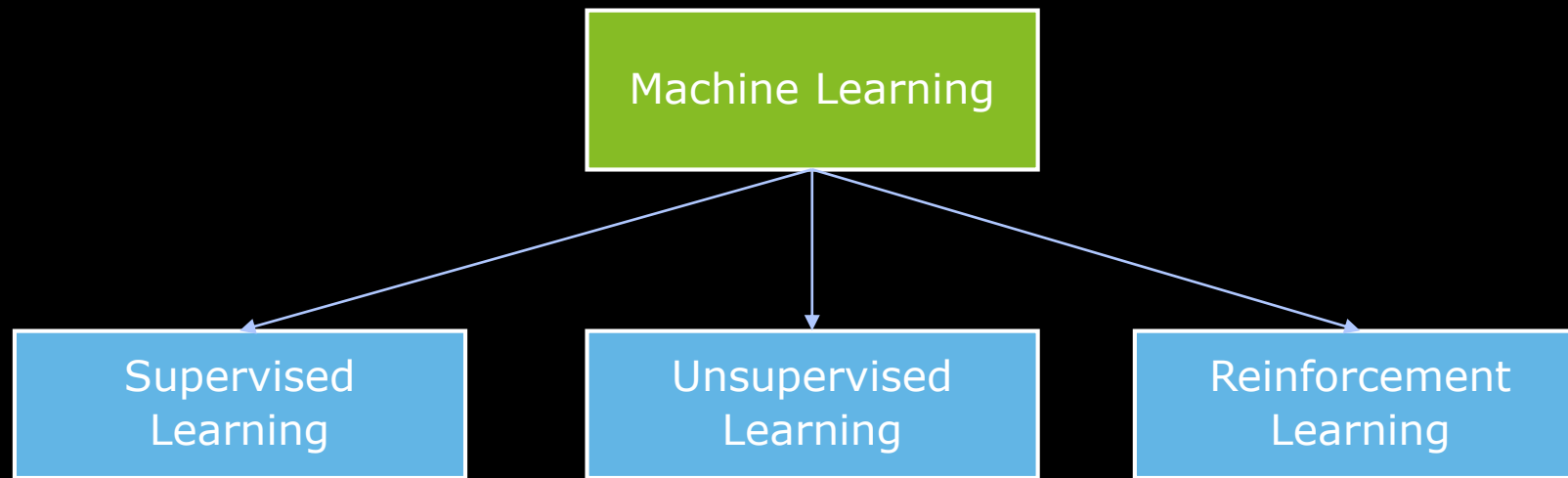
Data driven decision
making without explicit
rule-making



Intelligent programming



Intelligent programming



What is the problem with traditional audits?

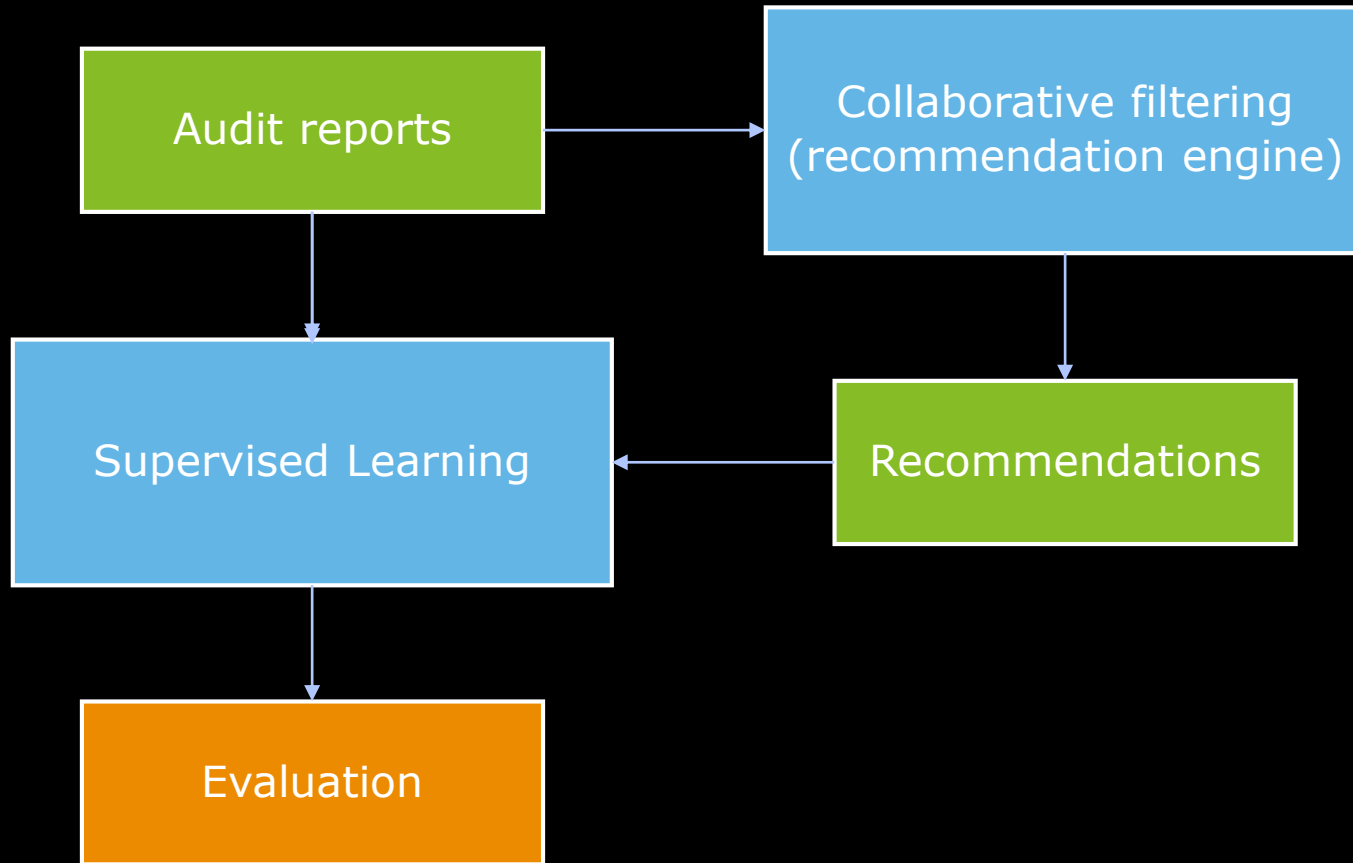
Problem	Solutions utilizing AI			
Traditional audit approach	Big Data	Discovering patterns for non-linear interdependencies	Effective anomaly detection	reasoning & judgement
Sample based testing	With AI, automated testing of the entire population is possible, so there are no random items left out			
Anomaly detection happens based on predefined rules	AI is able to adapt to the data, constantly learns from it, is able to draw new conclusions			
Hard to react to the dynamic environment	The picture is much more nuanced, with AI it is possible to analyze following a risk based approach and find anomalies e.g. transactions that differ from the behavior of the data set (unusual payments)			

Research to automate control deficiencies

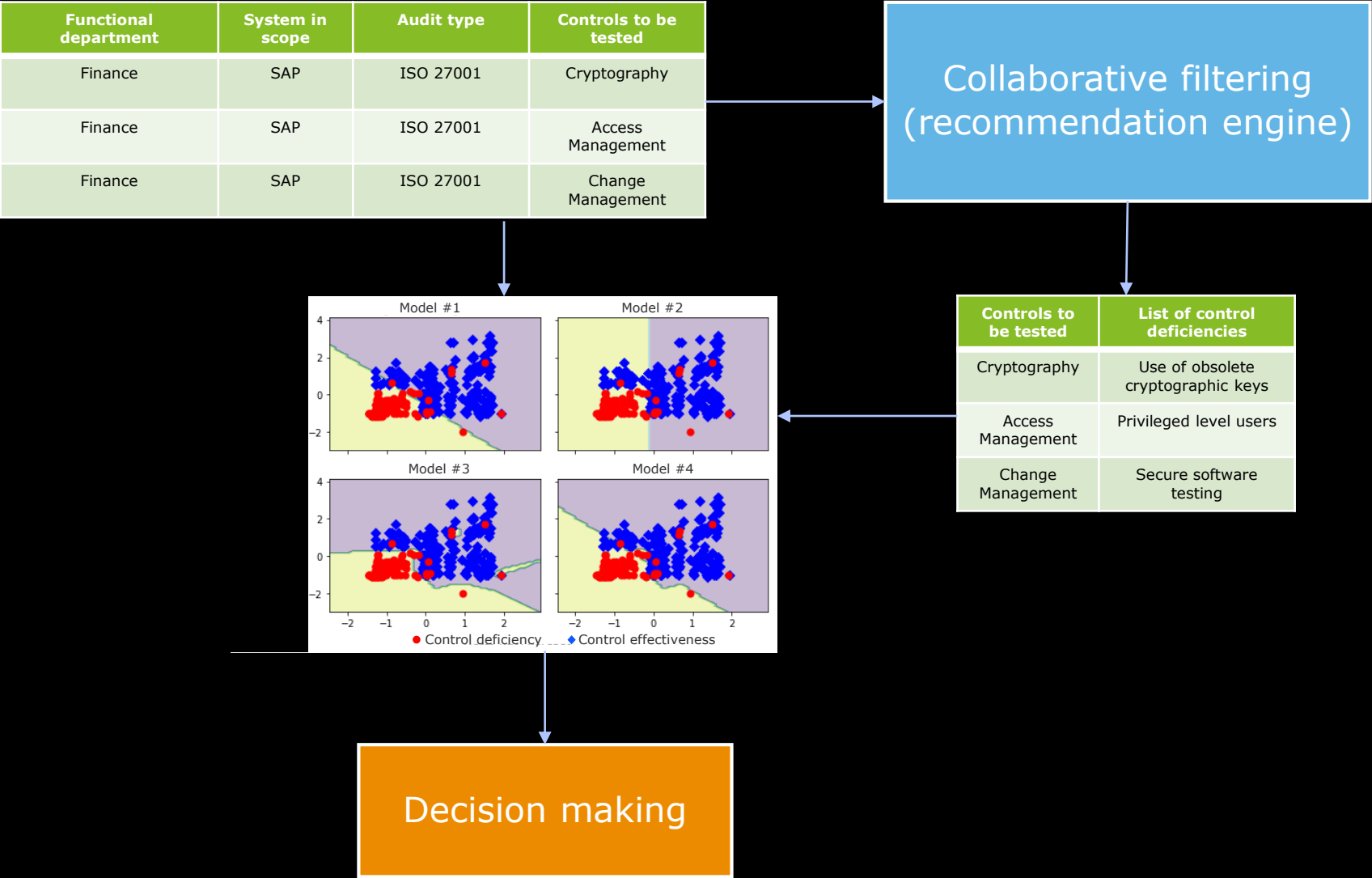
- Objective was to identify interrelations amongst control deficiencies in order to predict which controls may result in exceptions for a random audit
- Collected hundreds of audit reports with IT and compliance related control deficiencies
- Structured the findings into data tables
- Built up a hybrid model (deep learning, boosting, collaborative filtering)
- Tested the model



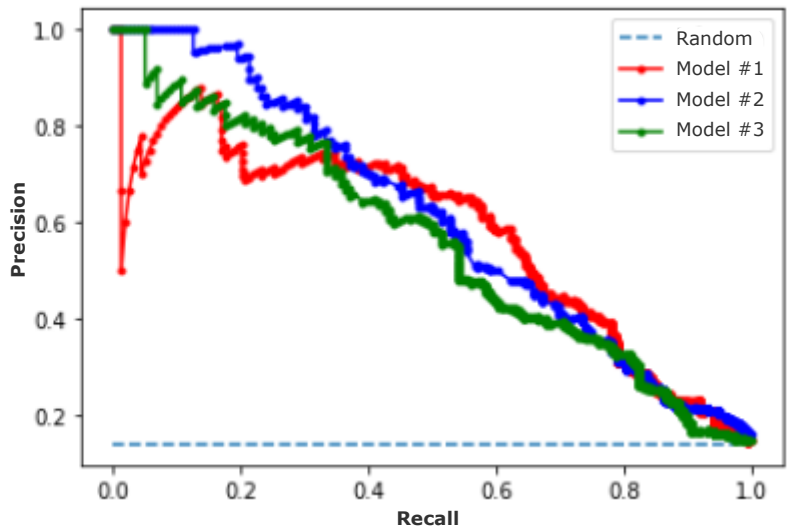
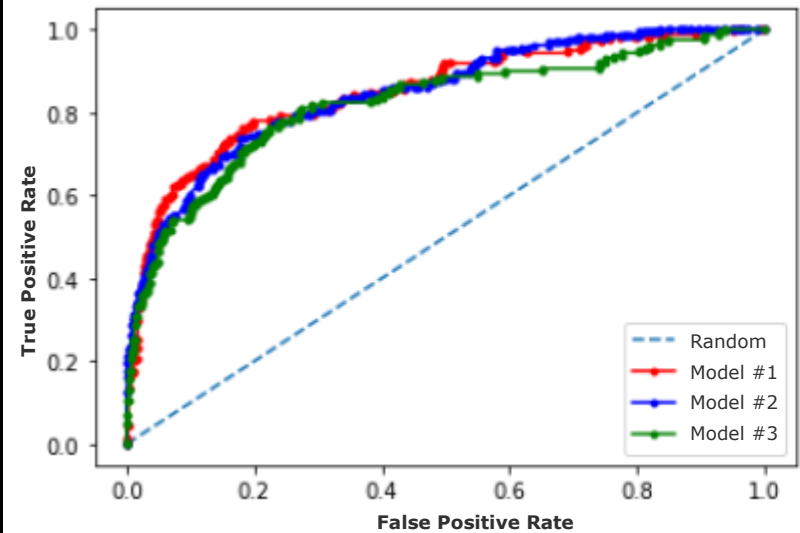
Research to automate control deficiencies



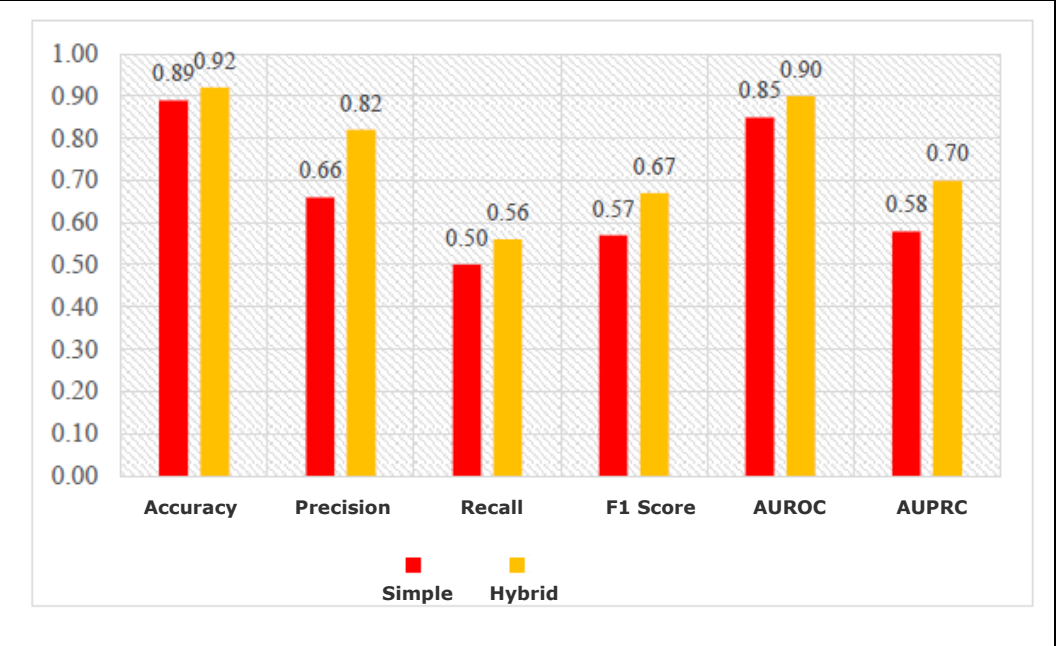
Practical example



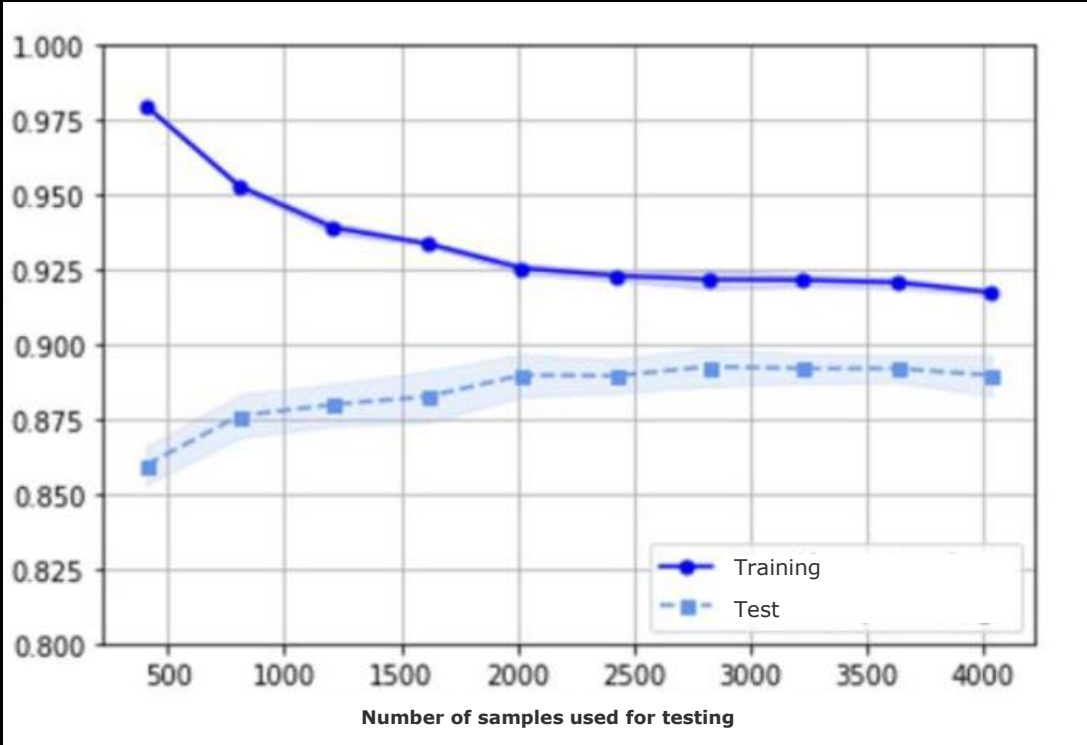
Research to automate control deficiencies



Research to automate control deficiencies



Research to automate control deficiencies



Conclusion

- There is an interrelation among control deficiencies that could be learnt by a machine
- If the machine analysis historical data collected in the past, it can give a quite accurate prediction on which controls may need a deeper examination or there is a potential deficiency (prior to fieldwork)
- The machine also can help perform quality assurance of audit work
- Auditing controls may totally be audited in the future?



Thank you!





Deloitte refers to one or more of Deloitte Touche Tohmatsu Limited, a UK private company limited by guarantee (“DTTL”), its network of member firms, and their related entities. DTTL and each of its member firms are legally separate and independent entities. DTTL (also referred to as “Deloitte Global”) does not provide services to clients. Please see www.deloitte.com/about for a more detailed description of DTTL and its member firms.

In Hungary, the services are provided by Deloitte Auditing and Consulting Limited (Deloitte Ltd.), Deloitte Advisory and Management Consulting Private Limited Company (Deloitte Co. Ltd.) and Deloitte CRS Limited (Deloitte CRS Ltd.), (jointly referred to as “Deloitte Hungary”) which are affiliates of Deloitte Central Europe Holdings Limited. Deloitte Hungary is one of the leading professional services organizations in the country providing services in four professional areas - audit, tax, risk and advisory services - through more than 400 national and specialized expatriate professionals. (Legal services to clients are provided by cooperating law firm Deloitte Legal Göndöcz and Partners Law Firm.)

These materials and the information contained herein are provided by Deloitte Hungary and are intended to provide general information on a particular subject or subjects and are not an exhaustive treatment of such subject(s).

Accordingly, the information in these materials is not intended to constitute accounting, tax, legal, investment, consulting, or other professional advice or services. The information is not intended to be relied upon as the sole basis for any decision which may affect you or your business. Before making any decision or taking any action that might affect your personal finances or business, you should consult a qualified professional adviser.

These materials and the information contained therein are provided as is, and Deloitte Hungary makes no express or implied representations or warranties regarding these materials or the information contained therein. Without limiting the foregoing, Deloitte Hungary does not warrant that the materials or information contained therein will be error-free or will meet any particular criteria of performance or quality. Deloitte Hungary expressly disclaims all implied warranties, including, without limitation, warranties of merchantability, title, fitness for a particular purpose, non-infringement, compatibility, security, and accuracy.

Your use of these materials and information contained therein is at your own risk, and you assume full responsibility and risk of loss resulting from the use thereof. Deloitte Hungary will not be liable for any special, indirect, incidental, consequential, or punitive damages or any other damages whatsoever, whether in an action of contract, statute, tort (including, without limitation, negligence), or otherwise, relating to the use of these materials or the information contained therein.

Differently from the above written, in case the information and materials are expressly provided as final performance of a contract concluded between you and Deloitte Hungary, Deloitte Hungary takes liability that the service has been provided and the product - if any - has been prepared contractually. Deloitte Hungary declares that the materials and information serve the persons / entities assigned and are suitable for the purposes determined in the contract. Deloitte Hungary excludes all liability for damages arising out of or in connection with the documents, materials, information and data provided by you. For all the questions not ruled herein, the relating contract shall be applicable.

If any of the foregoing is not fully enforceable for any reason, the remainder shall nonetheless continue to apply.