AI og analytics– andre eksempler i og udenfor Norden

Christian Hardahl, EMEA Healthcare Industry Leader, SAS Institute

Præsentation i forbindelse med vidensdeling på
'Nordisk dag for AI og Innovation i Health Care' afholdt 28. april 2022.

Denne præsentation er godkendt for vidensdeling.
Alle rettigheder er reserveret de retmæssige indehavere af ophavsretten.

Oplægsholder og SAS Institute har bidraget i denne videndeling og fraskriver sig imidlertid ethvert ansvar og erstatningsansvar for så vidt angår materialet.

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Health Innovation with SAS
Use Cases in Europe

SAS® HEALTH | ECO-SYSTEM

SAS Solutions
Local EMEA AIMs
PARTNER AIMs

PATIENT SAFETY	HEALTH CARE FRAUD & COST CONTAINMENT	SCREENING MODELS	AI IN 20 WEEKS	MODEL-OPS ASSESSMENT
RISK MODELS	CONTINUOUS MONITORING	PREVENTION MODELS	IMAGE ANALYSIS	ANALYTICAL VALUE TRAINING
MEDICAL TEXT ANALYTICS	PATIENT NO-SHOWS	MIoT	PREDICTIVE OUTCOMES	YOUR ANALYTIC INSIGHT MODULE

ACCELERATORS & Analytic Insight Modules (AIMs)

SAS® Health

DATA MANAGEMENT PLATFORM

DATA MAPPER | EPISODE BUILDER | COHORT BUILDER | FHIR/HL7 ETL SERVICES

Infrastructure — CLOUD OF CHOICE | ON PREMISES

ANALYTICS ACADEMY

&

SAS LEARNING PORTAL

SKILLS DEVELOPMENT

Service Offerings

AI in 20 weeks

ModelOps Assessment

Analytical Value Training

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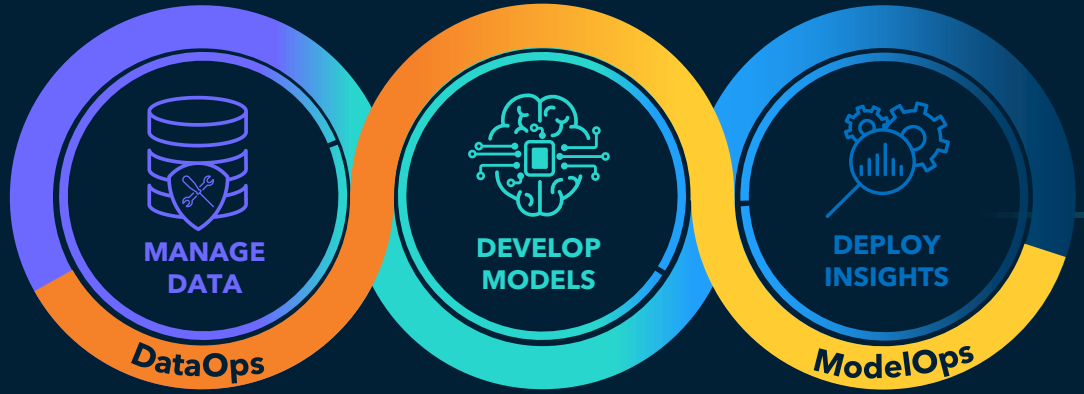
Statistics, Machine & Deep Learning

Natural Language Processing

Data Management

Deployment



Visualization

Decision Management

Computer & Machine Vision

Forecasting, Optimization

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What can be achieved

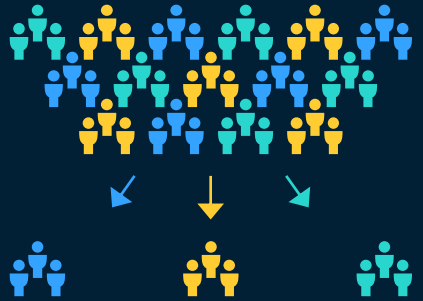
PRECISION HEALTH

PRECISION MEDICINE

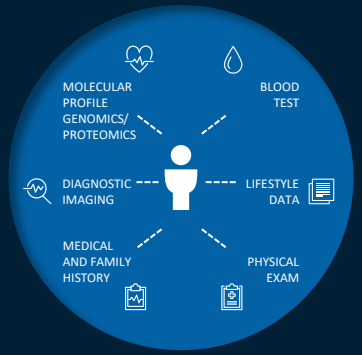
PRECISION PREVENTION

PRECISION DIAGNOSTICS

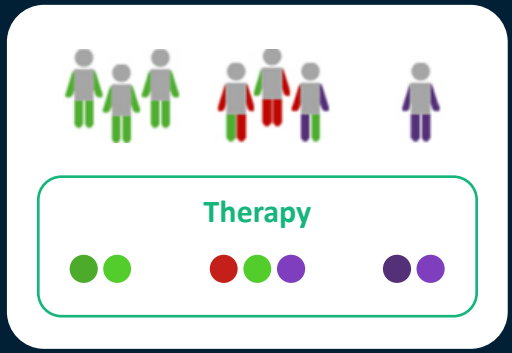
PRECISION TREATMENT



Early detection of patients at risk, Improve preventive measures (individual/collective)



Accurate disease diagnosis enabling individualized treatment strategy



Improved outcomes through targeted treatments and reduced side effects

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Ward Control Center with Treant Zorggroep

Treant ZORGGROEP HOSPITAL CARE LIVING & CARE

Treant takes the next step in data-driven working with Ward Control Center

Posted on: September 15, 2021

The team post of the Acute Admissions Department (AOA) at the Scheper hospital in Emmen has recently been set up as a so-called Ward Control Center (WCC). With this, Treant Zorggroep is taking the next step in utilizing digital information flows.

Treant has developed the Ward Control Center independently, with support from software supplier SAS. Part of the new WCC is a huge touchscreen in the team post of the AOA, on which nurses can request and add patient information based on the floor plan of the department.

Easy data entry

Together with nurses, we looked at how data entry could be made as simple as possible. Everything is done via the touchscreen, a keyboard or external computer is not involved. This makes the WCC unique compared to other systems used in hospitals.

To work more efficiently

Treant wants to increasingly implement data-driven working in the care process. The care group has been working with the Treant Control Center (elsewhere also known as Hospital Control Center) for some time now. With the new Ward Control Center, for example, patients within the Acute Admission Department can be better distributed across the department according to specialism, making this much more efficient for both the patient, the nurse and the specialist from a logistical point of view.

It also helps the department gain insight into all kinds of processes. Consider, for example, the registration of the care level of employees. For nurses, it is quickly possible to see live who needs support where, thanks to different colors on the digital screen. Where information was lost after a shift with the use of whiteboards, this type of data can now be used to further optimize the nursing capacity within the entire organization.

Key highlights:

- Request & add information + color coding
- Overview of free hospital beds (24/7)
- Query runs every 5 minutes
- Treant Control Center & every clinical department via large TV screens
- No lost information after a shift = optimized nursing capacity

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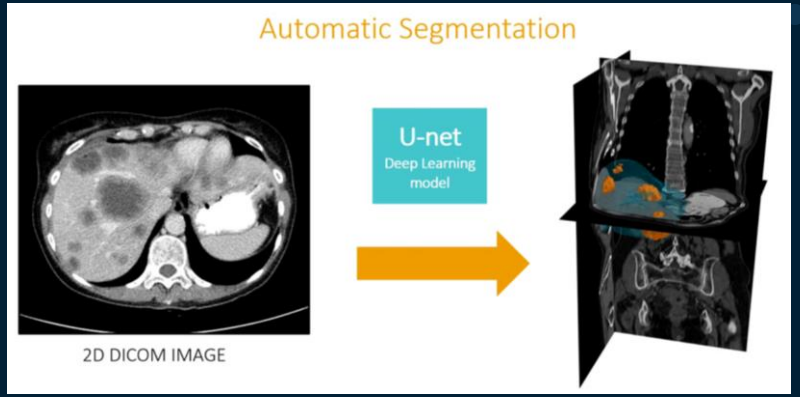
Computer Vision for diagnostics

Image analysis with Amsterdam University Medical Center

Objective of the solution is to improve tumor response evaluation of patients with colorectal liver metastases using artificial intelligence.

Solution is a deep learning algorithm that automatically segments the liver and metastases out of the CT scan.

Result of these models is measured by calculating the DICE score, which is now > 95% for the liver model and > 80% for the metastasis model, and these scores keep on improving since new training data is added on a weekly basis.



Click picture for video demo

The Prognostic Value of Total Tumor Volume Response Compared With RECIST1.1 in Patients With Initially Unresectable Colorectal Liver Metastases Undergoing Systemic Treatment

[Link](#) to scientific article

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Computer Vision for diagnostics

Video analysis with Amsterdam Skills Centre

Objective of the solution is to make surgical teams better at gall bladder removal by improving their skills in recognizing the anatomy properly.

Solution is a deep learning algorithm that automatically segments the CVS (critical view of safety) based on more than 650 videos reviewed, labeled and scored by 50 surgeons.

Result is currently a model that identifies CVS with a DICS score > 70% and automatically detecting and displaying structures to help surgeons avoid injuring patients during surgery.

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Computer Vision for diagnostics

Video analysis with Amsterdam Skills Centre

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Automated Quality Assessment of Kidney Transplants

With University of Cambridge

SAS and Cambridge Transplant Centre worked together on developing a **computer-based scoring system of digitalized renal biopsy images** that replicates the assessment currently performed by renal histopathologists, and that could be used by transplant clinicians to inform them of the **suitability for transplantation**.

What we have achieved

- Break down the scoring process into **interpretable components**
- Develop a pipeline of **reproducible steps** to address each component
- Train **computer vision models**, including classification, object detection and segmentation
- In the making of publishing a paper

Solution Potential

The automation of the process could lead to

120 extra kidney transplants to be performed each year, saving up to **£3.5m**

Reference

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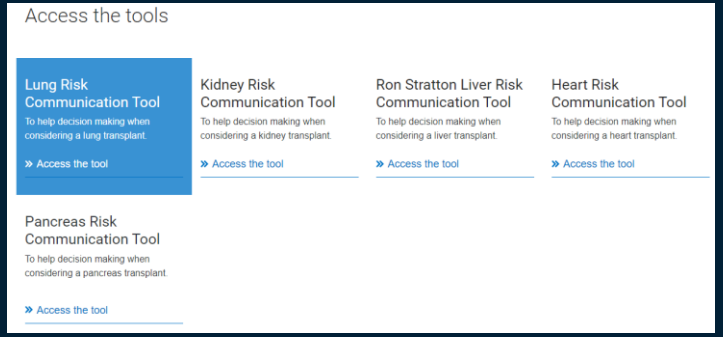
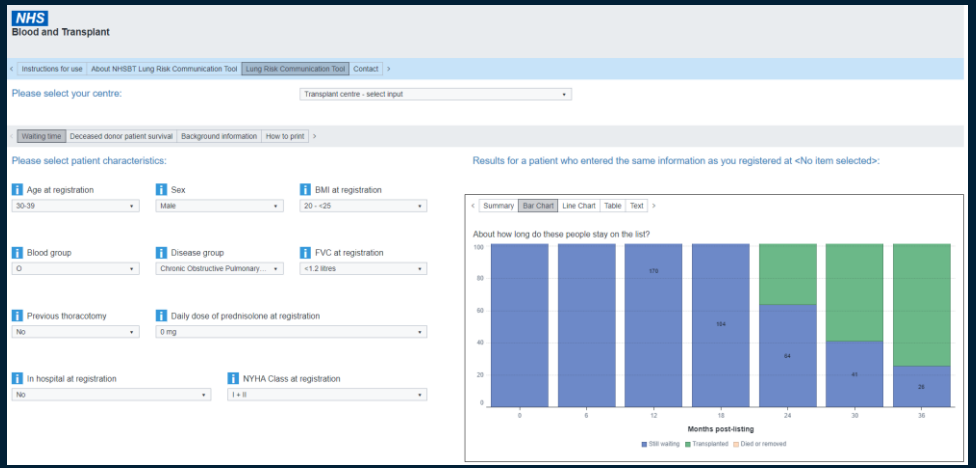
Public Risk communication tools with NHS Blood and Transplant

The NHSBT **Risk Communication Tool (RCT)** is an online **personalised calculator** that can help doctors and nurses **communicate risk** and **benefit** about transplantation to patients, and can help patients more easily **understand the numbers and statistics** presented to them in clinic. It helps **visualise** possible **outcomes** for patients from the point of listing or point of transplant for deceased donor lung transplantation.

Development of the statistical models and the X-RCT was undertaken by the NHS Blood and Transplant Statistics and Clinical Research team.



Link:
External facing tool



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AI for Societal Good Challenge

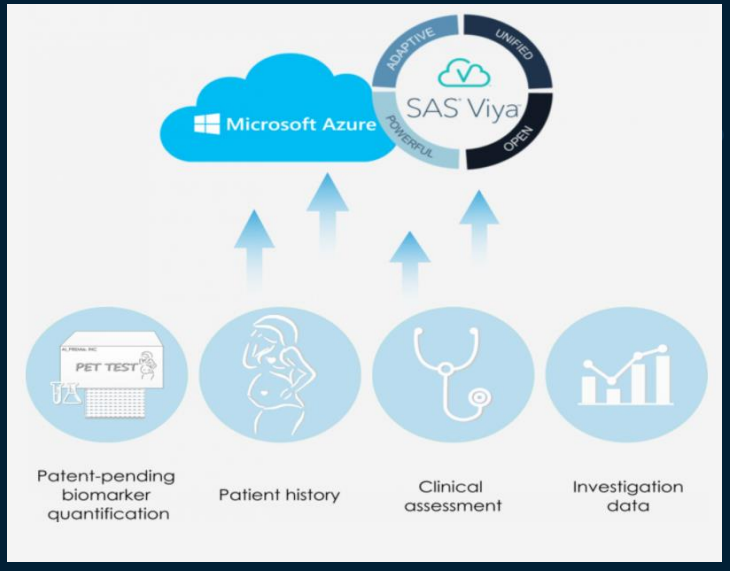
Societal Challenge:

50,000 mothers & 500,000 babies die each year due to pre-eclampsia.
Development of a rapid, reliable diagnostic & risk stratification tool is an urgent, unmet challenge.

Societal Impact:

AI_PREMie is our solution for risk stratification of pre-eclampsia.
AI_PREMie will enable timely delivery decisions and better patient outcomes, transforming the lives of pregnant mothers and their babies.

AI PREMie
Revolutionising Preeclampsia Care



- Partnership announcement UCD & SAS
- Succes story (UCD, SAS & Microsoft)
- The Irish Times story
- Health Pulse Podcast

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AI for Societal Good Challenge

AI PREMie

Revolutionising Preeclampsia Care

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Tak for opmærksomheden

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