Overcoming Barriers to Data-Driven Workflows

in Healthcare and Mobility

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Can AI help doctors with diagnosis?

Approximately **60 000** people in Sweden are diagnosed with skin cancer each year, and around **500** of these patients die from their disease. In an effort to detect possible malignant lesions on the skin, an image classification model can be utilised.

Limits Of Data-Driven Approaches

Data confidentiality

Protecting against the disclosure of information by ensuring that the data is limited to those authorized

## Computational reproducibility

Obtaining consistent results using the same data and code as the original study

Data diversity

Different protected characteristics of the workforce and data applicants, ie. gender, age ect.

Synthetic Data for Melanoma Detection

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Synthetic data can enhance datasets of rare diseases where collecting the data is much harder since the cases are more limited (like brain tumors). It is also useful for sharing data in order to work together with other institutions. Generated data can reduce biases in the real datasets that make the algorithms biased towards a specific type of data and thus less robust.

malignant

benign
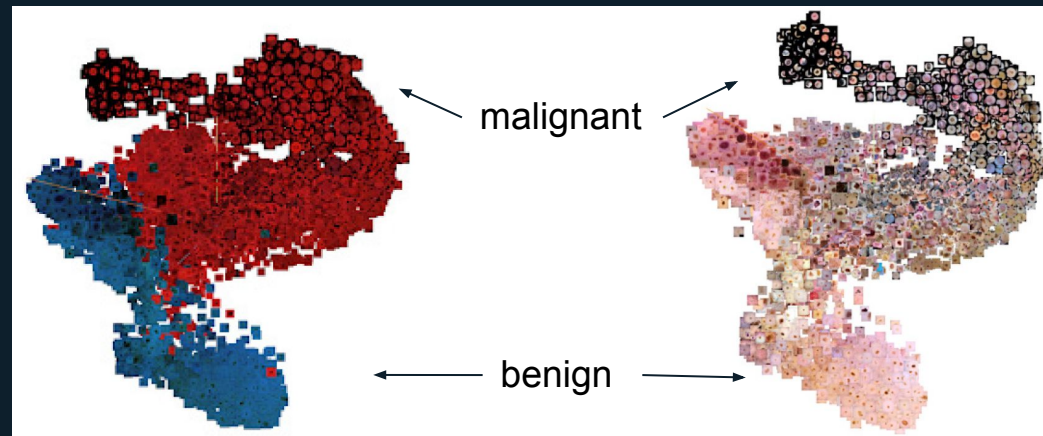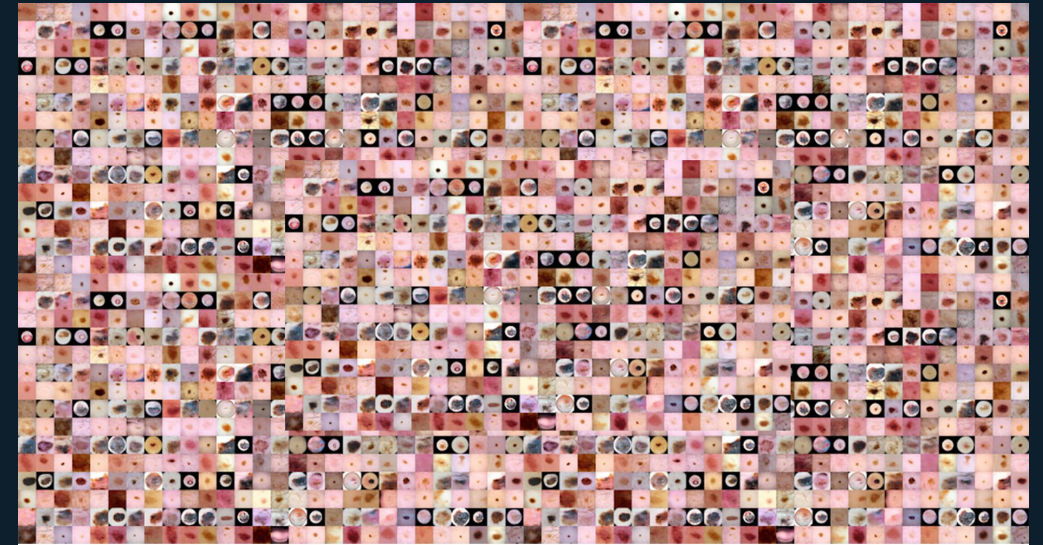
Artificial data generation also needs huge amounts of data

Federated Learning in Dermatology

Vinnova Project: Decentralized AI in Healthcare

Flower Framework
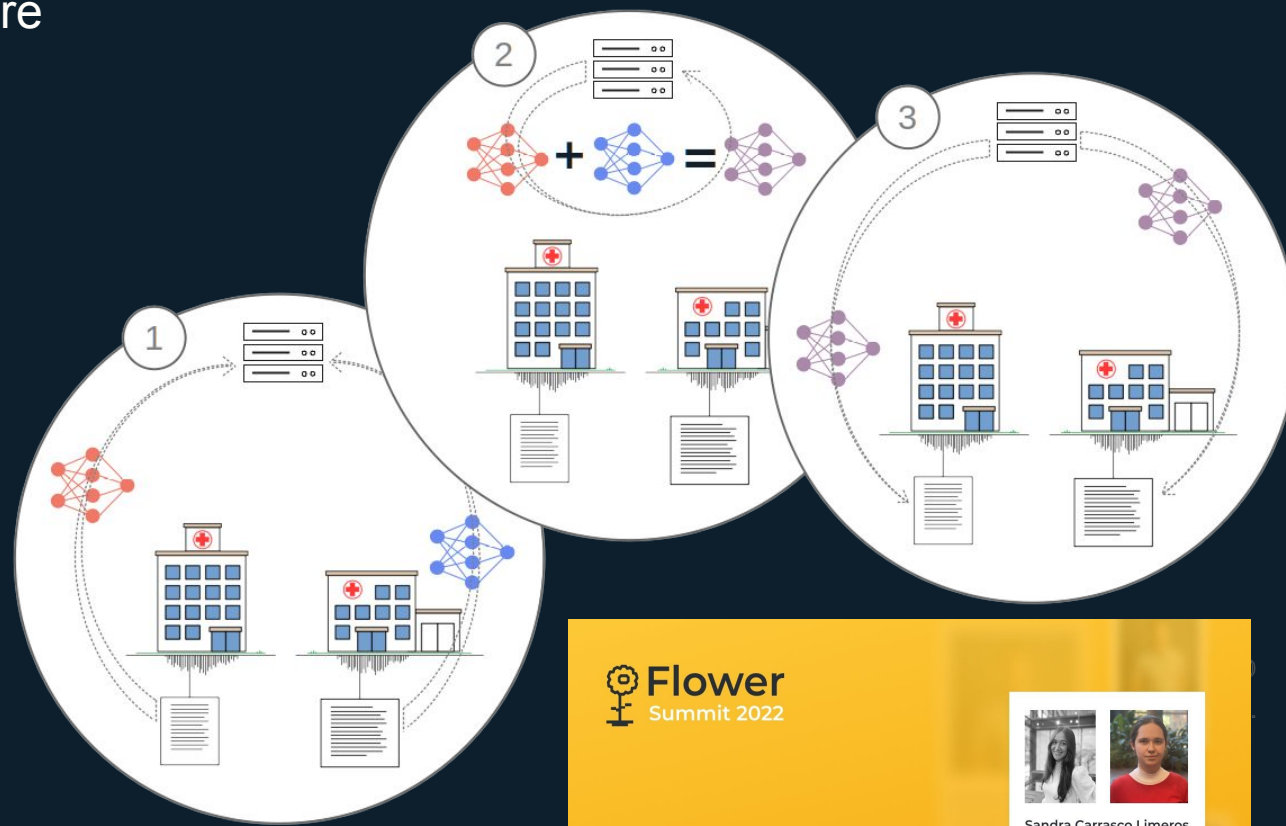
faster and diverse

Synthetic data generation

- ○ Federated synthetic data generation of skin lesions based on data from 3 hospitals

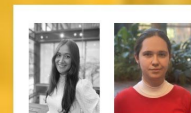reliable and accurate

Melanoma detection

- ○ Size influence
- ○ Data unbalance
- ○ Instrumentation biases

🌸 Flower
Summit 2022

Improving Swedish healthcare ecosystem using Flower

Research

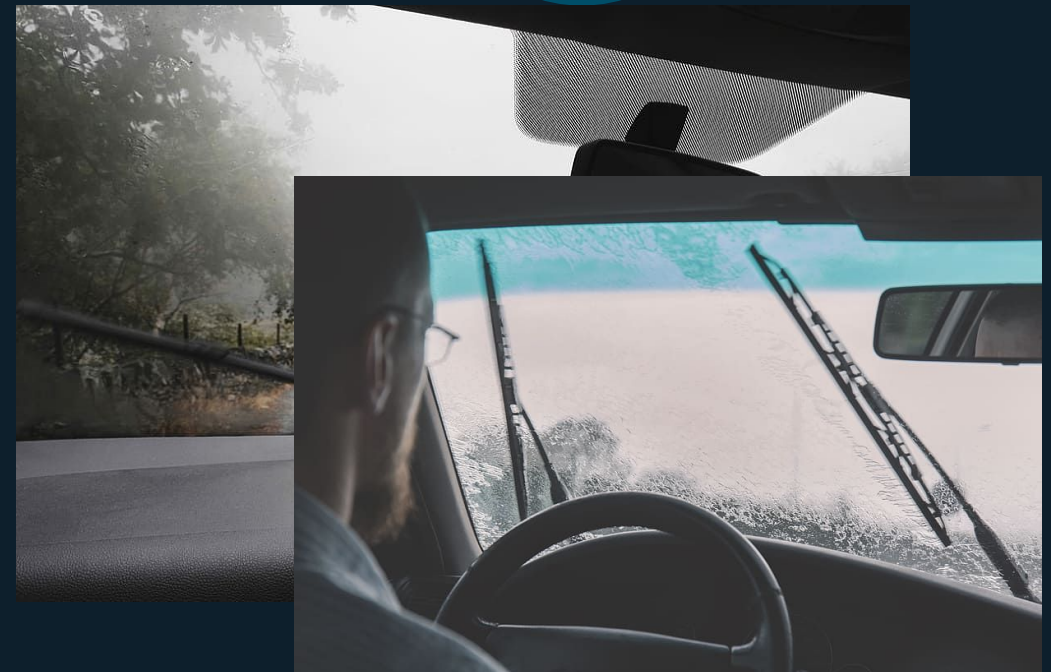Sandra Carrasco Limeros & Sylwia Majchrowska
Speakers

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Synthetic Data and Autonomous Vehicles

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Data confidentiality not include personal information

Computational reproducibility human-safe and trustworthy

Data diversity diverse weather, lighting, surface, and object

The main challenge is that autonomous cars have to be trained to react to **numerous circumstances** which are **difficult to foresee in the real world**. In addition, even when collecting this data is possible, it is usually **very expensive**. This is where the use of **synthetic data** could make a difference in training self-driving cars.

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Thank you!