

● CDAO Canada 2026

From Research to Real-World: Operationalizing ML & AI in Regulated Healthcare Environments



Fannie Cai

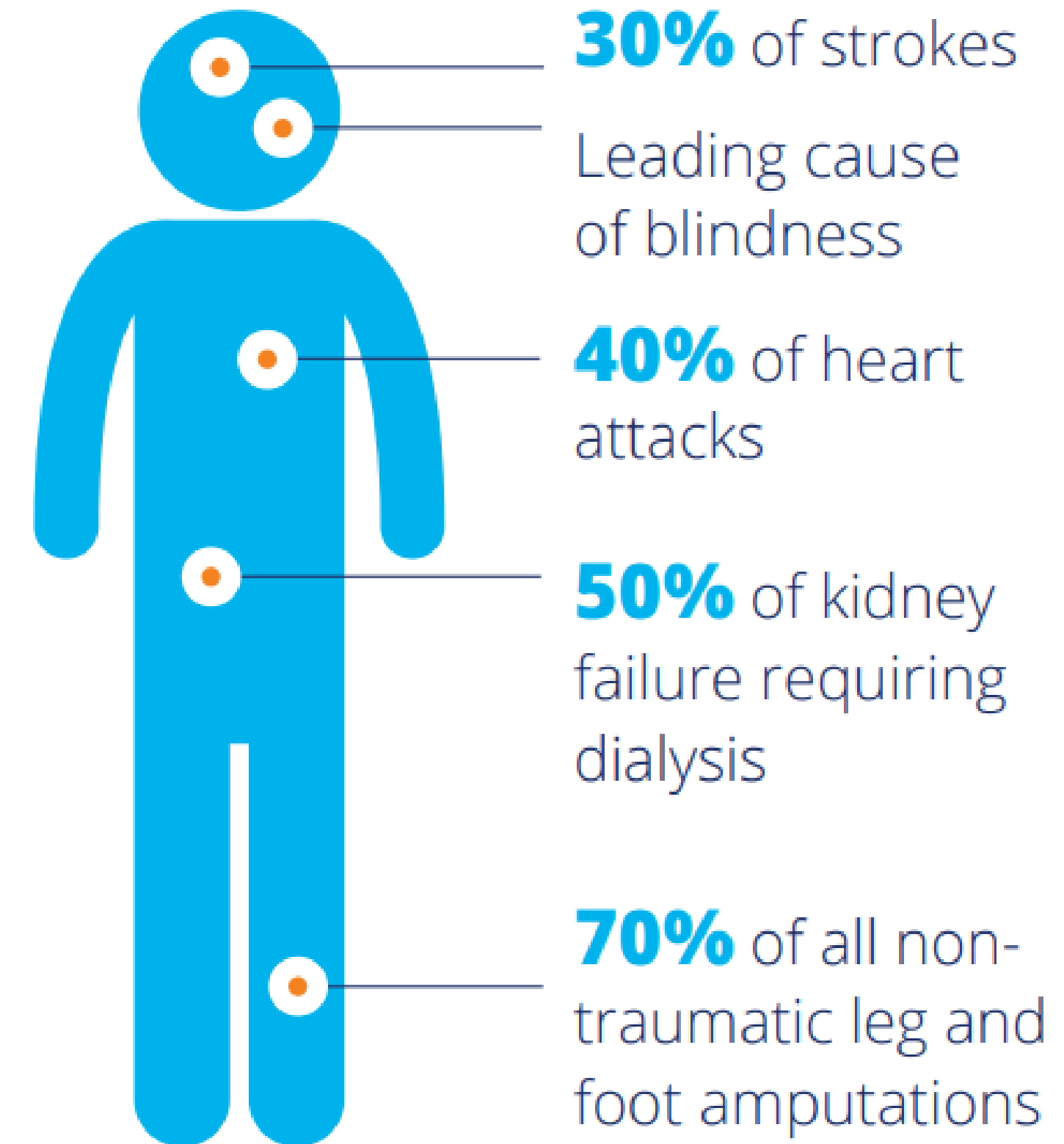
Director,
Machine Learning and
AI Engineering

CANADA SPENDS \$50 M DAILY ON DIABETES AND ITS COMPLICATIONS¹

- Real-World Applications

Preventative Health with Type 2 Diabetes Prediction

Early and smarter detection will drive prevention in metabolic conditions like type 2 diabetes.



*Performed with de-identified data, in full compliance with Ontario's privacy regulations and the guidance of the Information and Privacy Commissioner

1. Diabetes Canada

- Real-World Applications

Predicting Late-Stage Prostate Cancer

LifeLabs designed a deep learning architecture to handle the non-uniform temporal patterns of laboratory data*.

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- **SHORT TERM
TEMPORAL VARIATIONS**

- **LONG TERM
TEMPORAL TRENDS**

- **RELATIONSHIPS
BETWEEN BIOMARKERS**

- Real World Applications

Privacy-preserving Synthetic Data Generation

Synthetic data is a great method of providing access to granular data without compromising privacy.

Fidelity

Utility

Privacy

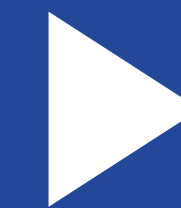
Real-World Application:

- Clinical Biomarker Longitudinal Data
- Conditional Probabilistic Autoregressive Model
- Generative Adversarial Network Models

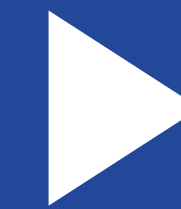
- Canadian Privacy and Legal Considerations

Establishing Safe AI Practices

Staying informed with existing and developing Privacy and AI regulations is key to establishing safe AI practices.



PIPEDA/PHIPA



De-identification Guidelines for Structured Data



Algorithmic Impact Assessment tool



Voluntary Code of Conduct on the Responsible Development and Management of Advanced Generative AI Systems



Thank you for your time.

By providing insights, opportunities, and programming, our extensive network and deep expertise help ensure Canadians have access to exceptional care throughout their health journeys.

Our Purpose:

To make insights accessible so you can make choices to live your best life.

Our Approach:

Listen, learn, partner.

LifeLabs. Empowering a healthier you.