Data Science education – partnership between industry and academia

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Photo by Stefan Els

Universities are coming under pressure!

Financial and transformation pressure

- Universities in South Africa are under pressure financially:
  - National Student Financial Aid Scheme
  - Missing middle
  - National Research Foundation

- Universities are under pressure to transform.

- Universities need funding for developing both general and specialised skills.

- Who are the biggest losers of failing universities?

There are multiple opportunities for industry to partner with universities

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- Undergraduate education: Bursaries

- Postgraduate education: Bursaries

- Training and skills development: Short courses and other training

- Directed research

- Long-term social impact projects

Summary

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The School aims to build capacity in Africa in solving systemic grand challenges through data and artificial intelligence.

- Faculty level school operational for 3 years

- High-impact activities
  - Prof Tulio de Oliveira's work on genomic surveillance
  - Showcased as Top 10 breakthrough technologies in 2022 by the MIT Technological Review
  - Over 10 Nature, Science and Lancet articles in 2022
  - Training innumerable African research leaders on how to sequence corona, significantly increasing surveillance and prevention of global pandemics through national response

- Research focus areas
  - Genomic surveillance
  - Fight for social justice
  - Impact of climate change on health
  - Big data and agriculture
  - Cybersecurity
  - Government and policies

Background

Vision - Stellenbosch University will be Africa's leading research-intensive university, globally recognised as excellent, inclusive and innovative, where we advance knowledge in service of society.

Applied Mathematics

Computer Science

Electrical and Electronic Engineering

Industrial Engineering

Information Science

Statistics and Actuarial Science

A Collaborative multi- and trans-disciplinary School
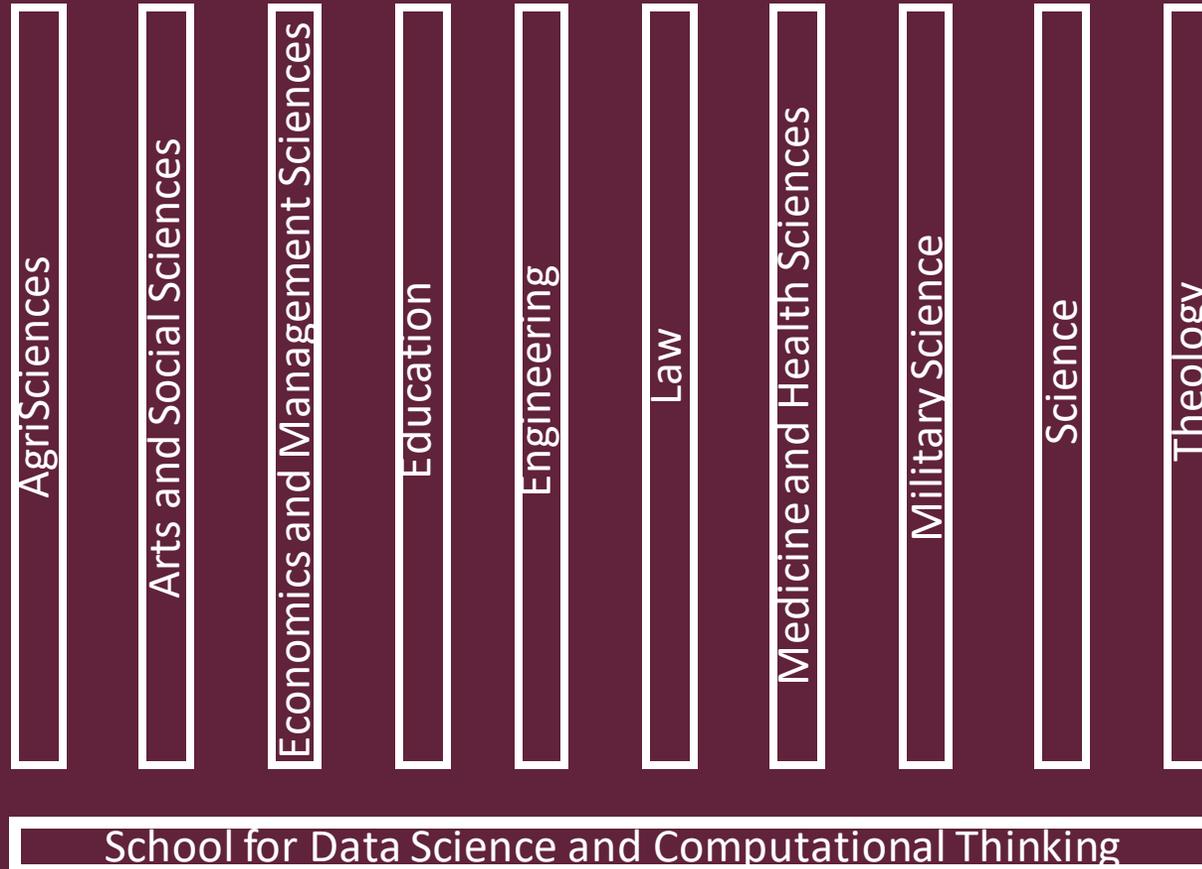
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Faculties

AgriSciences

Arts and Social Sciences

Economics and Management Sciences

Education

Engineering

Law

Medicine and Health Sciences

Military Science

Science

Theology

School for Data Science and Computational Thinking

The vision of the School is to be a world-class institution for Data Science and Computational Thinking in and for Africa

School with a Global Impact

Prof Tulio de Oliveira and his previous PhD student – Dr. Sikhulile Moyo listed in the **Time 100 most influential people of 2022**

Prof Tulio de Oliveira listed in Nature among the ten people who **helped to shape science in 2021**

COVID-19 variant tracking, led by Prof Tulio de Oliveira listed among the **Ten Breakthrough Technologies of 2022** by the MIT Technology Review

Prof Tulio de Oliveira awarded the **SAMRC Gold Medal** and the **Batho Pele Platinum Award**

The Plan

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Stellenbosch University

School for Data Science and Computational Thinking

Centre for Epidemic Response and Innovation (CERI)
South African Centre for Epidemiological Modelling and Analysis (SACEMA)
A node of the South African Chair in Artificial Intelligence Research
AI for social justice

Standard Bank Lab
Capitec Chair in the applied AI
Transaction Capital
Human Centric AI*
Data Science for finance*

AI for Social Justice
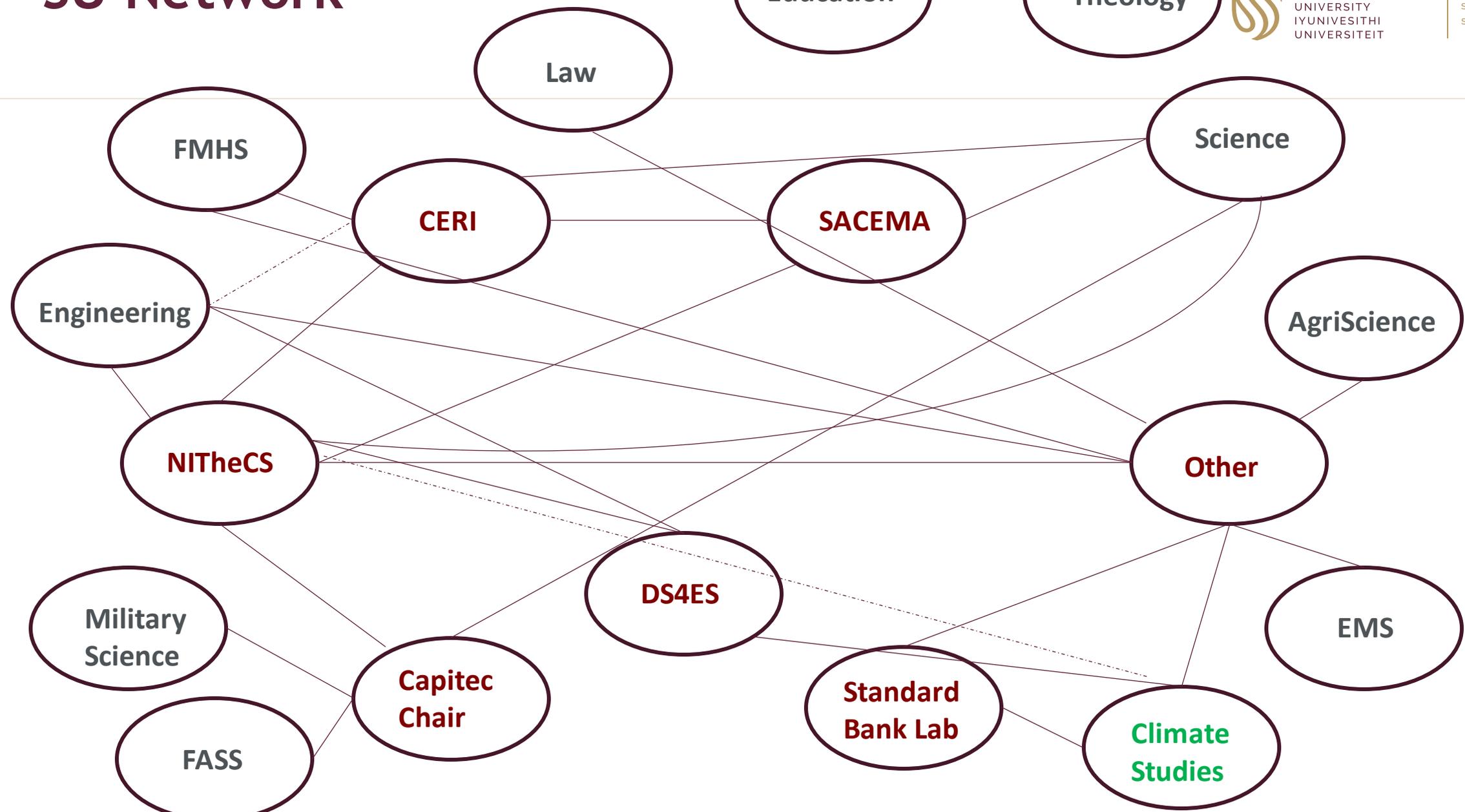
How can we use data science and AI to affect policies proactively through a social justice lens?

- The development of a social justice exploration tool to aid policymakers in their decision making, using digital twins (based on data science) for the simulation of the effects of prospective policies on different population groups.
  - Use case: Impact of lockdown policies on local communities.
  - Can we use data from 2019 and early 2020 to predict the impact of lockdown on policies?

- Initiating exploratory links with IRCAI
  - A UNESCO centre
  - AI solutions for SDGs

SU School for Data Science and Computational Thinking: Current Collaborations

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So, what does this all mean?

Industry have an opportunity to accelerate transformation and ensure financial sustainability at SA universities

- Participate in developing research agendas
    - Transformation
    - Financial sustainability
    - Shape agendas that accelerate social equity

- Bursaries
    - Missing middle
    - Postgraduate bursaries

- Internships

Thank you
Enkosi
Dankie

Photo by Stefan Els

Data Science and Computational Thinking | iNzululwazi ngeDatha neNgqiqo yokuBala | Datawetenskap en Rekenaardenke