A World Leading SFI Research Centre

Science Foundation Ireland sfi For what's next

Empowering Citizens Smarter Societies

Insight

SFI RESEARCH CENTRE FOR DATA ANALYTICS

HOST INSTITUTIONS

DCU

NUI Galway OÉ Gaillimh

UCC University College Cork, Ireland Coláiste na hOllscoile Corcaigh

UCD Dublin

PARTNER INSTITUTIONS

Maynooth University National University of Ireland Maynooth

Tyndall National Institute

Trinity College Dublin Coláiste na Tríonóide, Baile Átha Cliath The University of Dublin

University of Limerick Ollscoil Luimnigh

FUNDED BY:

European Union European Regional Development Fund

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Overview & Impact

4
Co-Lead Universities
4 partner institutions

Built on **20** years of research in Data Analytics and AI

450+
Academics, Postdocs, PhDs, RAs

2000+
Scientific conference and journal papers

121+
Funded collaborations with industry partners

300+
Research Awards

12
Spin out companies
72 license agreements

60+
H2020 consortia, 580+ collabs., 40 countries

1,137+ school visits, 28,000 students

250
PhDs graduated,

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Overview & Impact

€593m to the Irish economy

€1.46 : €1 in additional investment

14 conferences, 2000+ delegates, €3.2m

641 alumni, 26%+ went to industry

12% of licenses of all HEIs

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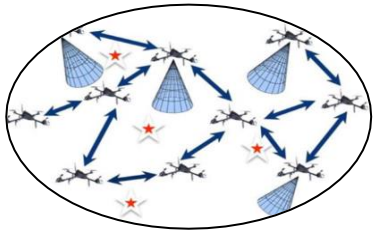
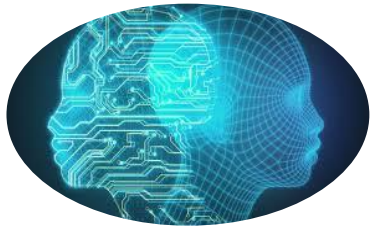
Core Scientific Expertise

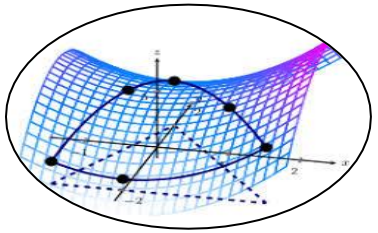
Multimedia Analysis



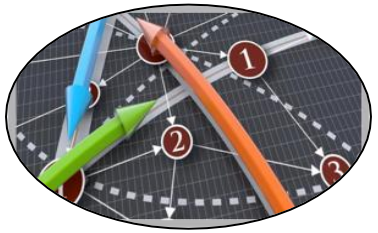
Network Analysis



Artificial Intelligence



Optimisation



Constraint Programming

Human Performance

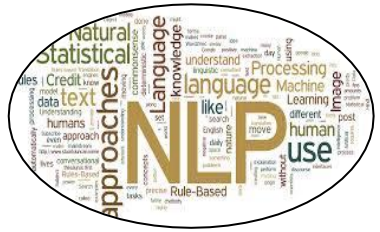
Recommender Systems

Computer Vision

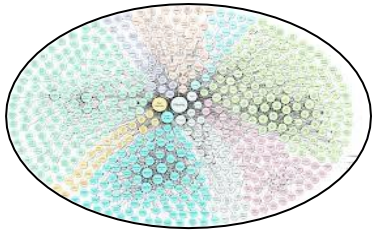
Machine Learning

Chem/Bio Sensors

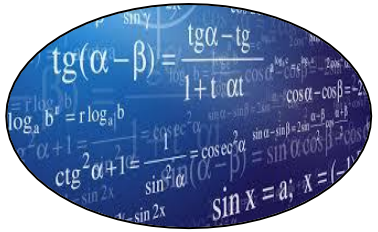
Internet of Things



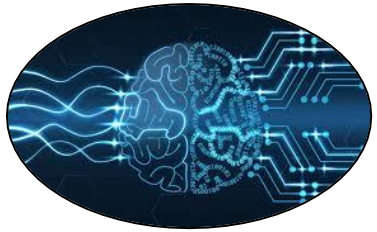
Natural Language Processing



Linked Data

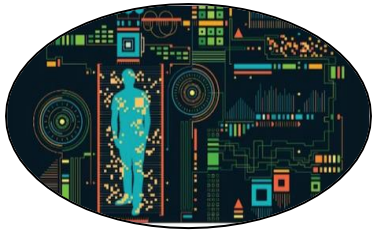


Maths &Stats

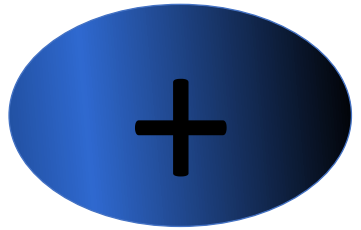


BCI

Open Data



Lifelogging



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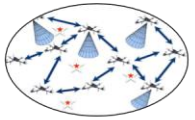
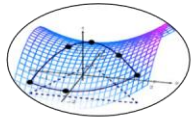

Network Analysis

Artificial Intelligence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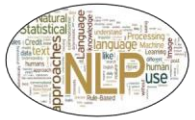

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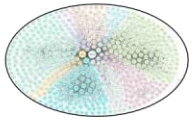
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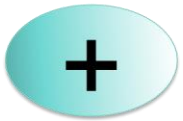


Platform Research Programme

Trustworthy AI

Data Engineering and Governance

Sensing & Actuation

Scaling

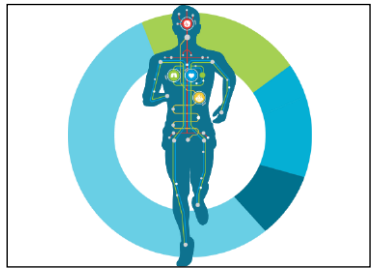
Multi Modal Analysis

Model Building

Decision Making

Foundations of Data Science

Health & Human Performance



Enterprise & Services

Smart Communities & IoT

Sustainability & Operations

Integration & Demonstration Platform

Augmented Human

Smart Enterprise

Sustainable Societies

Platform Research Programme

Trustworthy AI

Data Engineering and Governance

Sensing & Actuation

Scaling

Multi Modal Analysis

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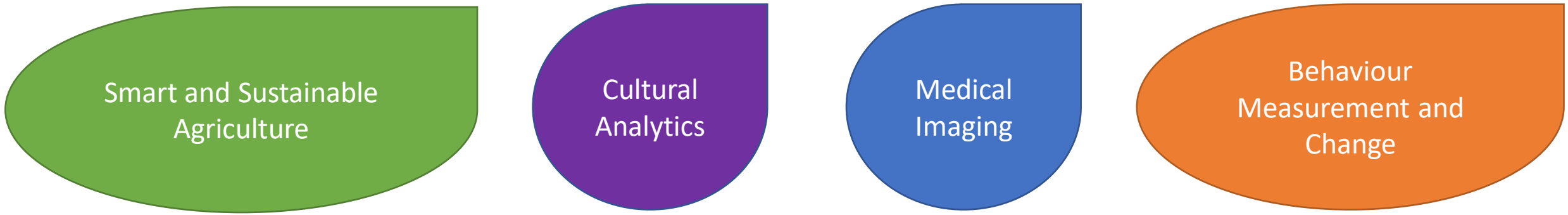
Foundations of Data Science

New Platform Research Initiatives (PRI)

Foundations of Data Science



- ✔ Investigators form clusters around specific application domains
- ✔ Drives cross site collaborations
- ✔ Helps with PhD / Post Doc recruitment
- ✔ Great PI/FI engagement and vibrant groups

Behavior Measurement & Change - **the interface between data science and health and performa**

Key Objective : Work with experts in health and sports science to address challenges in measurement, understanding and influencing behaviour and performance in health and sport.

- We would like to further our development of:
  - ➢ Strategies for objective, reliable and sensitive measurement and understanding of macro and micro level behaviours in health and sports performance contexts.
  - ➢ Data visualisation tools that effectively communicate insights to different stakeholders and
  - ➢ Personalised and adaptive recommendations for behaviour change and performance enhancement.

Through 3 interdisciplinary projects:

Optimising athlete performance in running.

Measurement and management of chronic pain

Enhancing lifestyle management and learning behaviours in students.

Medical Imaging - collaborative research between Insight and clinical experts.

Key Objective : to develop novel deep learning approaches for a variety of medical applications.

- Better deep learning models for medical image analysis.
- Apply to clinical tasks, and use interpretability and explainability to assist the clinician's workflow.
- Interest in state-of-the-art segmentation models for medical image analysis, applied to different modalities (MRI, CT, Xray, etc).
- Data augmentation- methods, GAN for image generation and enhanced model training.
- Joint learning, combining image data with medical reports.
- Time series analysis, LSTM's.

Thanks!

yvonne.smith@insight-centre.org

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