

Health Information Systems

An exploration of the role of academic institutions
in developing health information systems of the
future



African University of
Science & Technology
Abuja

Knowledge is Freedom

Overview

- What is a health information system?
- Historical context
- Current health information systems
- Future trends

What is a health information system?

- A system that allows collection AND USE of information related to health
- Collection
 - Paper-based
 - Electronic
 - Hybrid
- Use
 - Improve outcomes
 - Efficient management
 - Research

Historical Context

- Registration of deaths – Mid 15th century
- Florence Nightingale after Crimean war (1800s)
 - Promoted importance of hospital data
 - Collection of causes of illnesses and death
 - Evidence-based framework to reducing mortality

Historical Context

- 1945 – ENIAC
 - First all electronic general purpose digital computer
- 1950's – Computation used in medicine
- 1960's – Early work in medical information systems
- 1970's – Electronic medical records increase in popularity

Current state

Service provider

Patient related data

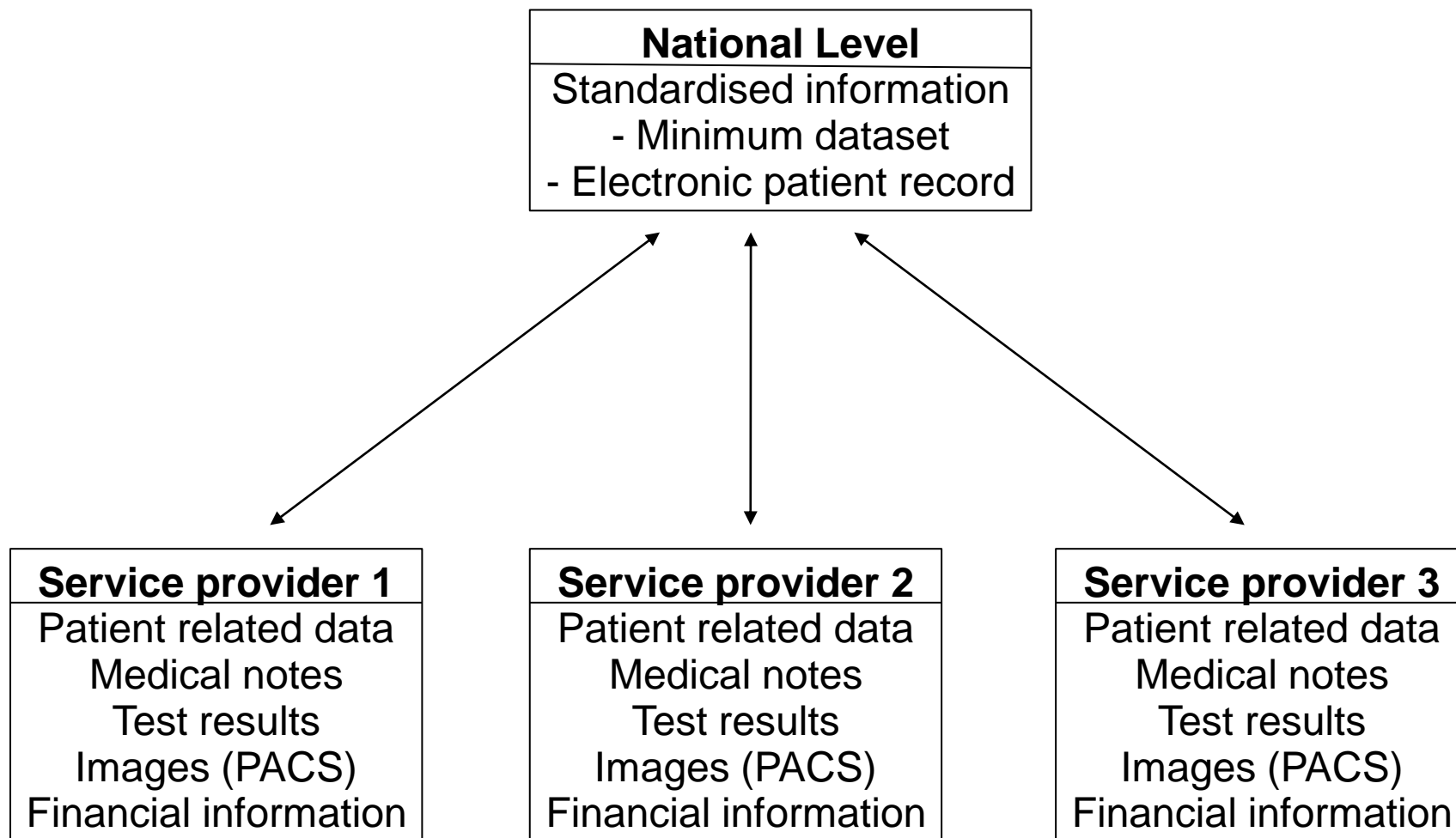
Medical notes

Test results

Images (PACS)

Financial information

Current state



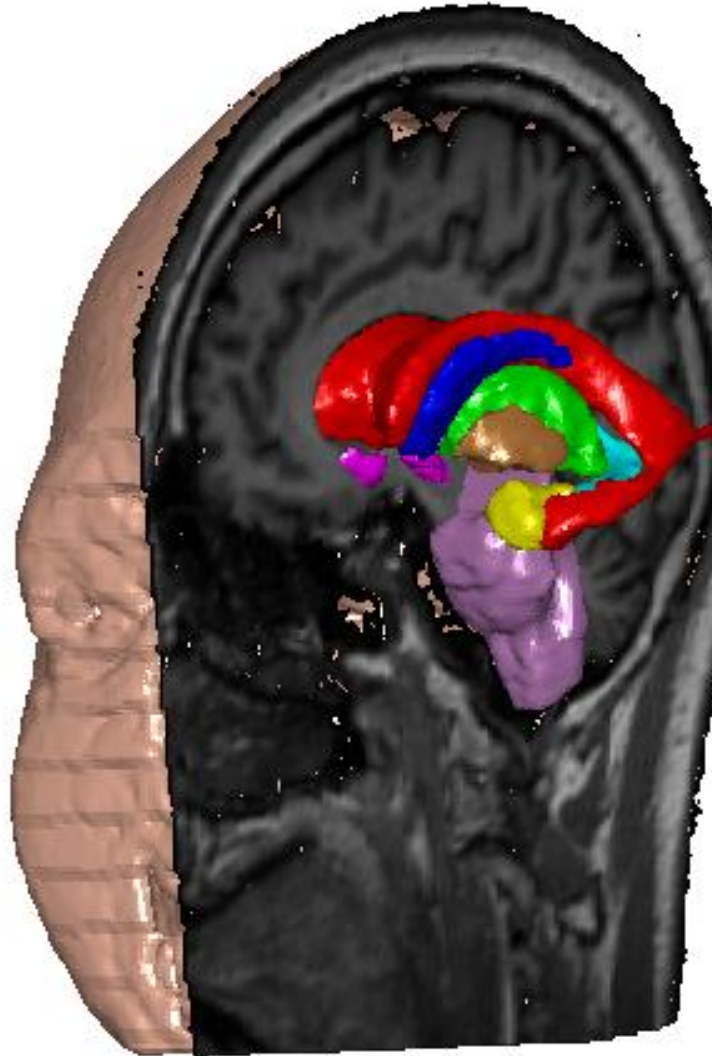
Role of technology

- Advances closely follow technological breakthroughs
 - Move to electronic and the computer
 - Move to e-health and the internet

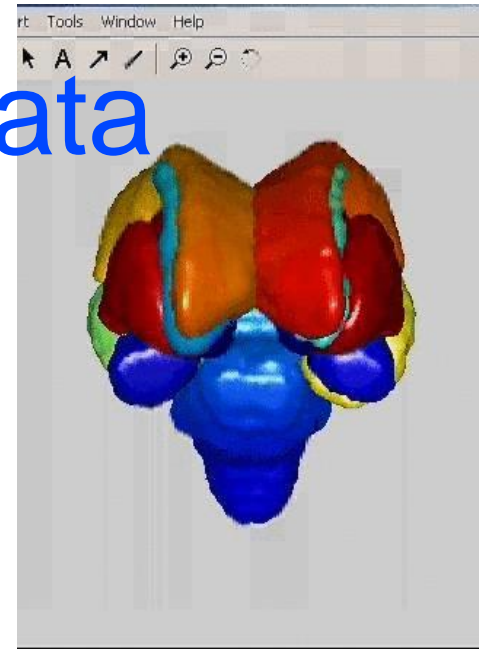
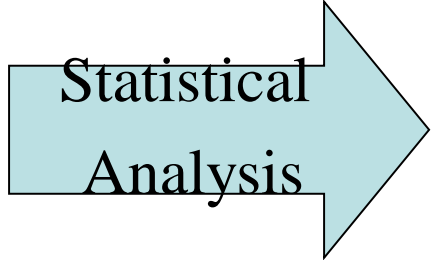
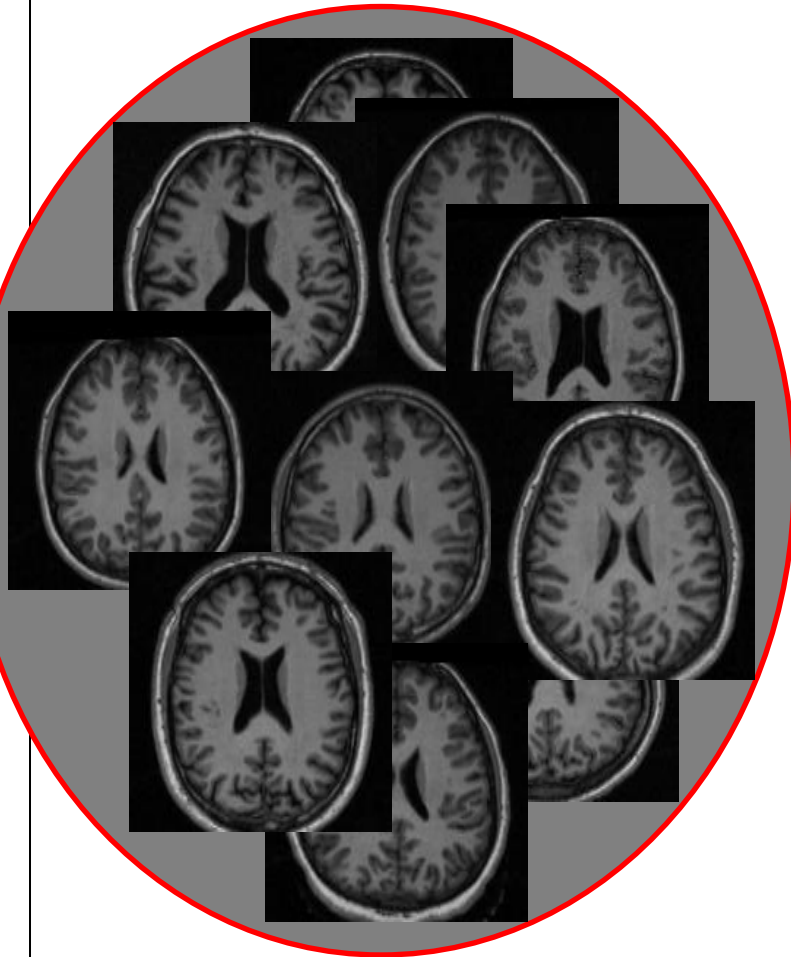
Future

- Currently experiencing a data explosion
 - 3D imaging
 - Genetic testing
 - etc
- Storage/retrieval of data is not a problem
- Intelligent and meaningful use of the data?

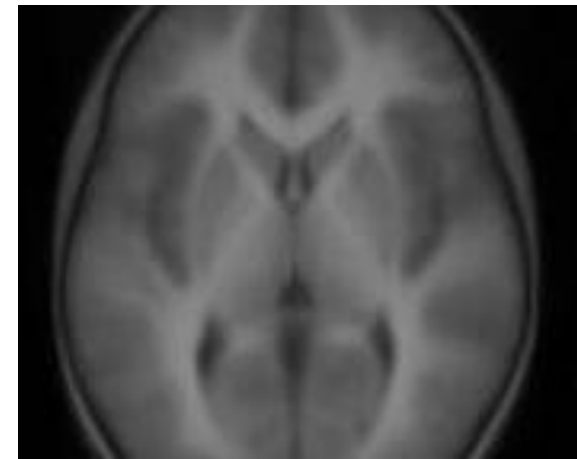
3D imaging data



3D imaging data



Shape Models



Appearance Models

Data from HIS



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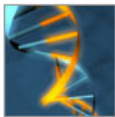
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Groups > Cambridge Bioinformatics

Cambridge Bioinformatics

Our mission is to apply cutting edge machine learning methods to key problems in bioinformatics.


Current projects




Integrating Functional Genomics data with Genetics to Help Understand Human Disease

Common diseases such as cardiovascular disease, cancer, obesity, diabetes and psychiatric illnesses are caused by a combination of multiple genetic and environmental factors. We are collaborating with researchers at the [Wellcome Trust Sanger Institute](#) to perform genome-level analysis that integrates genetic and functional genomic data to study effects of multiple genes jointly. [More...](#)


Scientific Publications
Past and present scientific publications [More...](#)




People



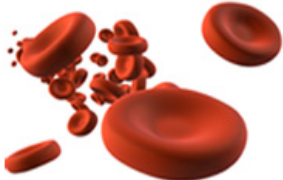
Christopher Bishop



Anitha Kannan



Nevena Lazic



[Machine Learning and Perception](#)
> [Machine Learning at MSR Cambridge](#)
> [Cambridge Bioinformatics](#)

Related Links

- [Microsoft Biology Initiative](#)
- [Technical Computing Initiative](#)
- [Computational Biology Group](#)

Internships

- We have open positions for [internships](#) throughout the year.

Latest Publications

- Leopold Parts, Oliver Stegle, John Winn, and Richard Durbin, [Joint Genetic Analysis of Gene](#)

Genomics



The Genome Analysis Centre receives strategic funding from the BBSRC

BBSRC Institutes



BBSRC news



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The Genome Analysis Centre is a specialist in genomics and bioinformatics, with focus on interpretation of data to enable and drive the use of bioscience in research and industry.

Its goal is to be at the forefront of data intensive science in biology, a leader in bioinformatics innovation and in the application of genome technology.

TGAC is a centre of National Capability, committed to applying genomics knowledge and expertise through enterprise, collaboration and skills development to advance scientific knowledge and promote economic growth.

BBSRC

The Genome Analysis Centre is one of eight institutes that receive strategic funding from the BBSRC.

The institutes deliver innovative, world class bioscience research and training, leading to wealth and job creation, generating high returns for the UK economy. They have strong links with business, industry and the wider community, and support policy development.

The institutes' research underpins key sectors of the UK economy such as agriculture, bioenergy, biotechnology, food and drink and pharmaceuticals. In addition, the institutes maintain unique research facilities of national importance.

Norwich Research Park

The Genome Analysis Centre is a Norwich Research Park partner.



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- Genomics
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- Genome Enterprise Limited
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- Current Vacancies

News



- 21 Mar, 2012: Science In Norwich Day
- 08 Mar, 2012: What have we got in common with a Gorilla?
- 06 Mar, 2012: National Science and Engineering Week at TGAC
- 20 Feb, 2012: Forthcoming Event: Next Generation Sequencing in Arabidopsis Research Workshop
- 06 Feb, 2012: TGAC ISO9001 Accreditation

TGAC e-Newsletter



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Question

Are universities and research institutions in Africa being brought on-board to work at the forefront of research in making effective use of this data?