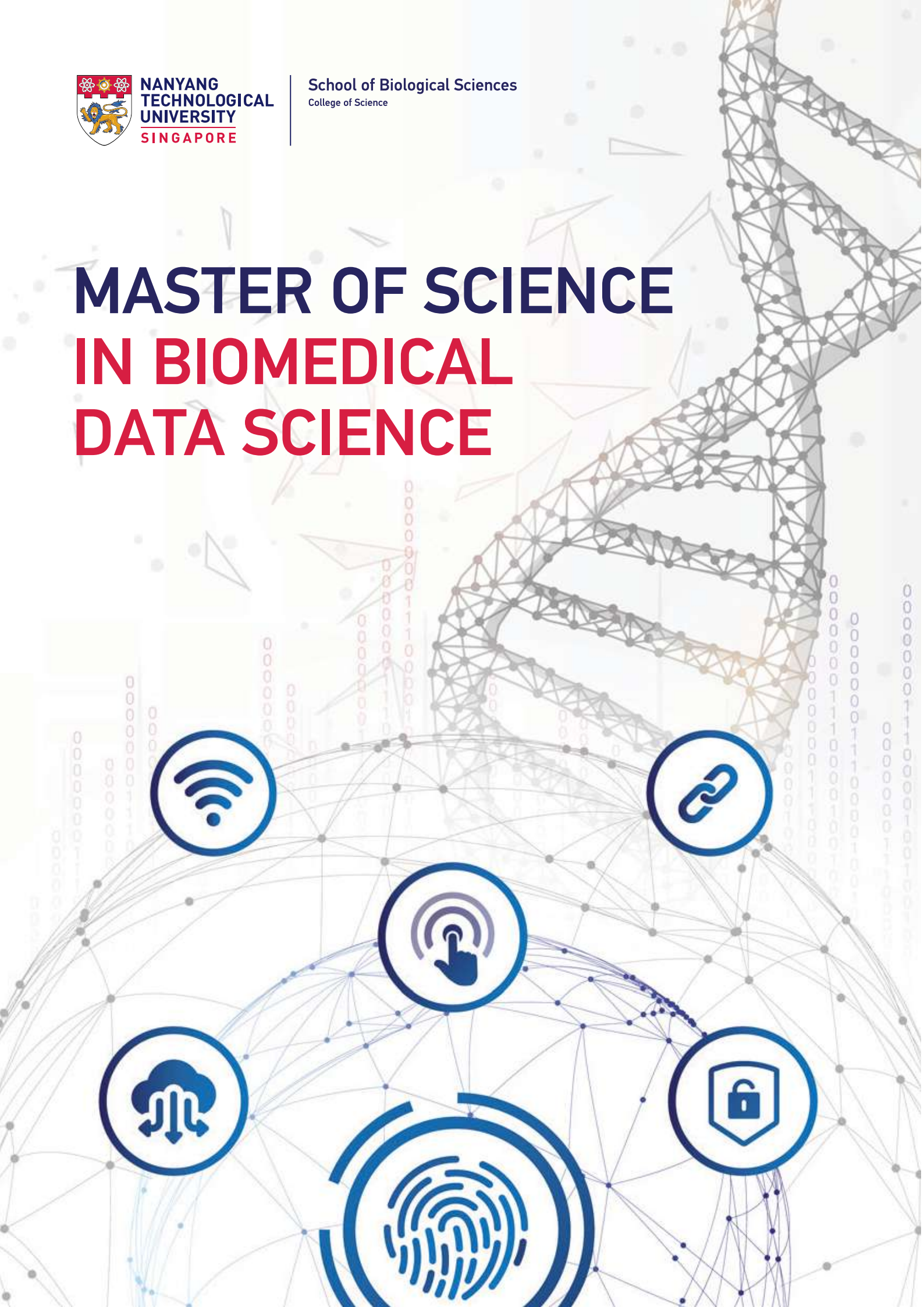
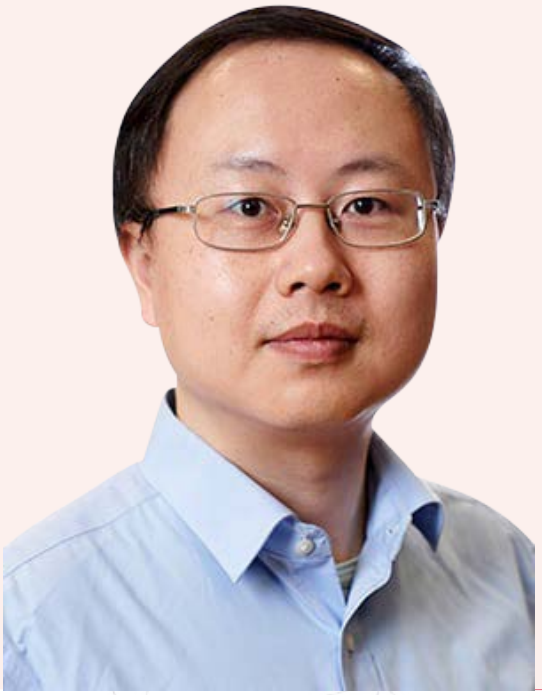
NANYANG TECHNOLOGICAL UNIVERSITY
SINGAPORE

School of Biological Sciences
College of Science

MASTER OF SCIENCE IN BIOMEDICAL DATA SCIENCE





DIRECTOR'S MESSAGE

In today's technological landscape, data science and artificial intelligence (AI) already act as innovation drivers in areas such as business and finance, where data scientists take helm in converting data into practicable insight instead of working behind the scenes in operations. Examples include AI-driven algorithmic trading and stock recommendation systems in Financial Technology (FinTech), and in automated engine design, system maintenance and robotics in Engineering. Given recent data explosion and concomitant advance of data science in other disciplines such as business, finance and computing, we predict that alongside the rapid and voluminous generation of biological data, a new variant of data-science, specifically addressing domain-specific issues pertinent to biology will emerge. We term this "Biomedical Data Science".

Biomedical data science is not just big data, technology, artificial intelligence or math. It is also heavily grounded in strong logical thinking and problem-solving skills. Deciding which curriculum elements are essential and how we can "train" innovation and creative thinking has been nothing short of an arduous journey. Following a two year planning phase with A*STAR and other stakeholders, we are very proud to present the first ever Masters Programme in Biomedical Data Science in Nanyang Technological University, Singapore.

This is an exciting programme where you will learn not just the programming and technological components, you will also learn about how to communicate data more elegantly via graphs, and practical thinking processes to formulate solutions on data science problems. You may also have the opportunity to work on real problems via our industry-partner tie-ups. By the end of this programme, you will be qualified to work as data specialists in the biotechnology, medical technology and pharmaceutical sectors.

If you love the biosciences, and recognise the transformative value of the new digital literacies, the **Master of Science in Biomedical Data Science** would be for you.

Dr Lu Lanyuan

PROGRAMME OVERVIEW

The Master of Science in Biomedical Data Science is the first graduate programme in Asia-Pacific to offer data science training specifically in the biomedical domain. It is jointly taught by data science practitioners and professors from the Nanyang Technological University (NTU) and the Agency for Science Technology and Research (A*STAR) Singapore.

Aligned with industrial trends, the curriculum is developed with inputs from experts in the pharmaceutical, healthcare and technological sectors. The programme imparts practical skills and competency acquisition through hands-on learning while offering students the opportunity to delve deeper into one of three specialisation tracks: Bioinformatics, Biotechnology or Artificial Intelligence (AI).

BIOINFORMATICS

Bioinformatics is the integration of information science with biology.

- Discover bioinformatics algorithms particularly in the high throughput application areas of genomics, transcriptomics and proteomics.
- Develop analytical pipelines for processing data raw and transform information into biological insight.

BIOTECHNOLOGY

Biotechnology aims to develop and enhance the platform for data generation and systems-based modelling.

- With a focus on systems and synthetic biology, this new skillset will aid you in the development of novel biological systems to potentially gain new biological insight.
- Get first-hand experience in preparing, processing and analysing samples in genomics, transcriptomics and proteomics.

ARTIFICIAL INTELLIGENCE

Artificial Intelligence focuses on the deployment of machine learning and artificial intelligence towards biomedical and healthcare applications.

- Gain familiarity with a variety of machine learning and deep learning algorithms and learn how to succinctly benchmark and perform validation.
- Become a data modeller, and use this competency to develop enhanced classifications in the areas such as diagnosis and prognosis, and biomarker development.

NETWORKING AND CAREER PLACEMENT

Graduates may explore new roles in data-analytics and technology-oriented positions in their home companies or pursue further specialisation and training in academia. The skillsets acquired are not relevant to only biomedical research and healthcare, but are also highly sought after in banking and finance, energy, government, transport and more. Experienced graduates may eventually move into strategic planning and decision-making roles using data-centric approaches.

In addition, we can also facilitate project placements in various industries and government sectors. Tie-ups with data science training and placement companies such as UpLevel can help ensure that you get the best possible exposure and training opportunities.

PROGRAMME STRUCTURE

12 AUs
Core

9 AUs
Specialization

9 AUs
Project

Please scan or click for full course curriculum

WHAT DO INDUSTRIAL EXPERTS SAY

The Biomedical Data Science curriculum can help develop specialisation in biomedical data analytics, to enhance the skills needed in manipulating current technologies to produce intelligent analyses and manoeuvring through the complexities of biomedical and pharmaceutical data...

... We believe that the curriculum is relevant in helping us achieve our goals, by training generations of data scientists who can handle the extensity and depth of biological data...

Business Unit Director,
AstraZeneca Singapore

The course you have developed will be one of the first to bridge this gap by integrating the different fields into a single programme. Training and integrating these skills in a single person will provide the graduate with unique and cutting edge skillsets that will be extremely valuable to the local and global biomedical research scene.

Psychiatrist, Senior Consultant & Regional Chief (North),
Institute of Mental Health / Woodbridge Hospital

We believe the graduates will be a valuable asset to the workforce for the biomedical, pharma/ biopharma, medtechs, bioinformatics industry.

Director,
Genedata Pte. Ltd.

ADMISSION

- A good honours degree in a science, engineering or computer science programme. Relevant working experience (in a bio-related industry or in data-science related applications) will also be taken into consideration.
- Good TOEFL (iBT≥100, PBT≥600, CBT≥250) /IELTS (≥6.5) scores for graduates from universities where English is not the medium of instruction.

Admission requirements and application procedure

Scan or click for more

Programme Fees

Scan or click for more