



# EXPLORE ARTIFICIAL INTELLIGENCE IN EPIDEMIOLOGY

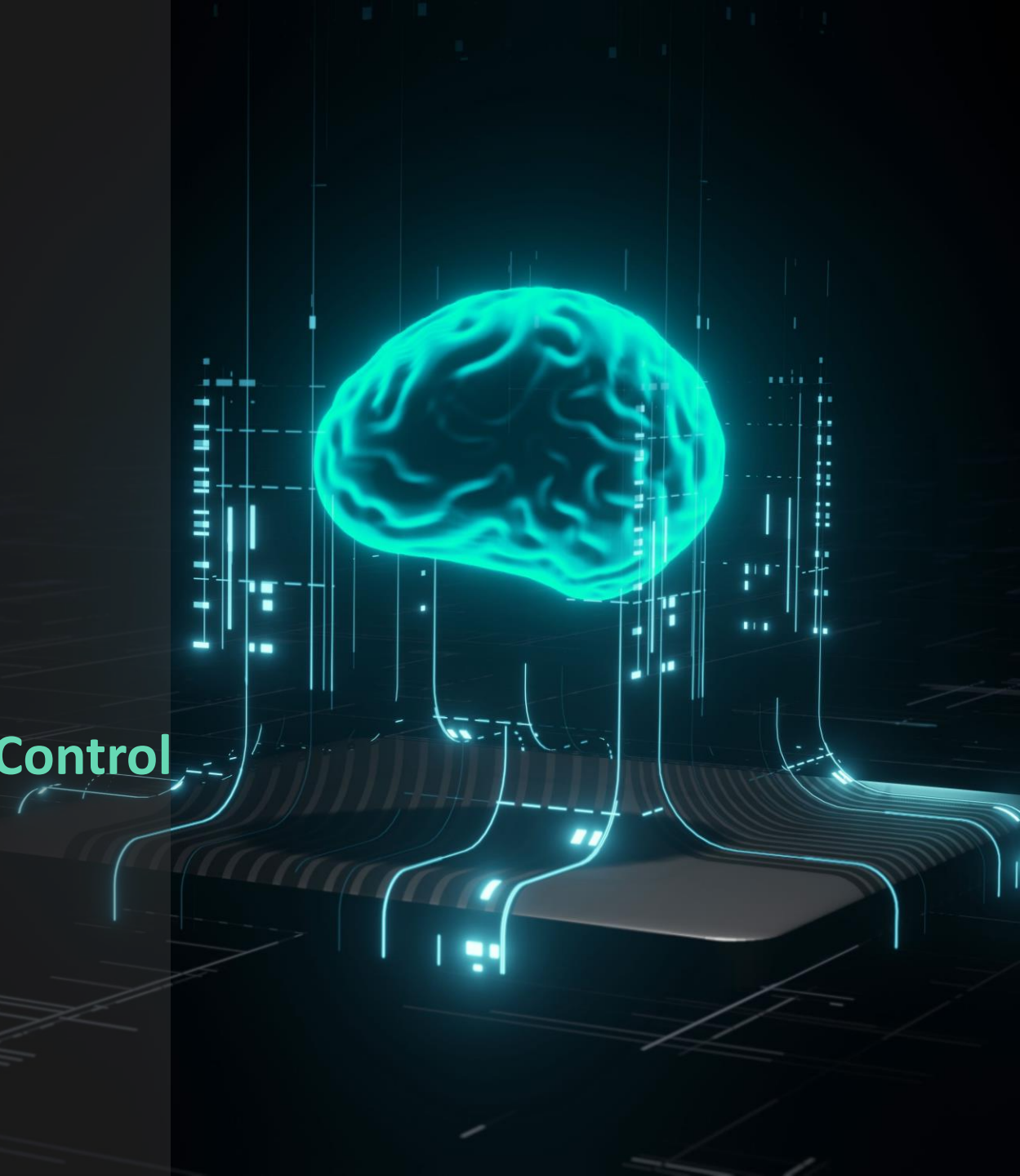
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## Introduction to AI in Epidemiology: Improving Infection Prevention and Control

Trainer: Dr. Konstantinos Giannakou



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# SEMINAR OVERVIEW

- Have a solid introduction to the terminology and methodologies used in AI-enhanced epidemiology.
- Be able to explain basic AI approaches for disease prediction and how they can improve infection control.
- Understand how to begin integrating AI-driven predictions into practical infection prevention strategies.
- Recognize the ethical considerations and challenges involved in using AI in public health.



## TARGET AUDIENCE

This introductory course is suitable for undergraduate and postgraduate students and professionals in the fields of Public Health, Epidemiology, Data Science, and AI. It is designed for individuals who are new to the field of AI in epidemiology and want to explore its foundational concepts. A basic understanding of Epidemiology and Public Health, along with introductory knowledge of statistics, is recommended.

# COURSE DESCRIPTION

This introductory course aims to provide participants with a foundational understanding of how Artificial Intelligence (AI) can be applied to Epidemiology, with a specific focus on improving infection prevention and control. As a starting point for those new to AI in this field, the course will explore how AI enhances the study of the occurrence, distribution, and determinants of health and disease in populations. Through the use of AI-driven data analysis and prediction tools, participants will gain insights into early disease detection and outbreak management.

The course introduces key concepts in AI and its integration with epidemiology, with a focus on modern techniques such as machine learning models, real-time data analytics, and predictive tools for monitoring disease spread. Case studies will demonstrate real-world applications, showcasing the potential of AI in optimizing public health interventions and improving patient outcomes.

- **The AI and Epidemiology Loop:** Key features of AI-enhanced epidemiological studies, including real-time data integration and adaptive predictive models.
- **Introduction to Models in AI Epidemiology:** Basics of disease spread simulations and AI-driven predictions.
- **Overview of Data Types in AI Epidemiology:** How population-level and individual health records contribute to AI models.
- **Introductory Machine Learning for Disease Prediction:** Fundamentals of neural networks and algorithms that help predict disease outbreaks.
- **Basic Applications of AI in Public Health:** How AI improves surveillance systems and supports real-time outbreak detection.
- **Integration of AI with Traditional Epidemiological Models:** Using AI alongside traditional methods for comprehensive infection control.
- **Introduction to AI in Systems Pharmacology and Therapeutics:** Predicting drug resistance and optimizing treatments with AI modeling.
- **Ethical and Practical Considerations:** Understanding key ethical challenges, data privacy concerns, and the limitations of AI models.

# COURSE INFO

<b>Location</b>	<b>Online Asynchronous</b>
<b>Date</b>	<b>02.12.2024</b>
<b>Time</b>	<b>N/A</b>
<b>Duration</b>	<b>1 hour</b>
<b>Cost</b>	<b>Fully funded under the EU project Level Up</b>



# Dr Konstantinos Giannakou

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Dr. Konstantinos Giannakou holds the position of Assistant Professor in Epidemiology and Biostatistics at European University Cyprus. His educational journey began with the attainment of a BSc in Nursing from Cyprus University of Technology in 2012, followed by an MSc in Public Health from Oxford Brookes University in 2013. Subsequently, he pursued an MSc in Epidemiology at the London School of Hygiene and Tropical Medicine (LSHTM) in 2017, culminating in the successful completion of his PhD in Environmental and Public Health in 2019.). His primary research interests encompass nutritional epidemiology and epidemiological vaccine research. Dr. Giannakou has an impressive publication record, with over 80 scientific journal articles published in international peer-reviewed journals.



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