



THE UNIVERSITY of EDINBURGH  
**informatics**

# **Informatics Research Review: Tutorial 2**

**Academic year 2023-2024**

**Semester 1, Week 4**



THE UNIVERSITY of EDINBURGH  
INFORMATICS FORUM

# Overview

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1. **Self-reflection: My Interests**  
(20 min)
2. **Writing an Abstract** (25 min)



# Self-reflection: My interests

## Exercise A:

Start by selecting a topic that genuinely intrigues you (you can refer back to your introduction from tutorial 1), and write down your reflections about what you already know on the topic:

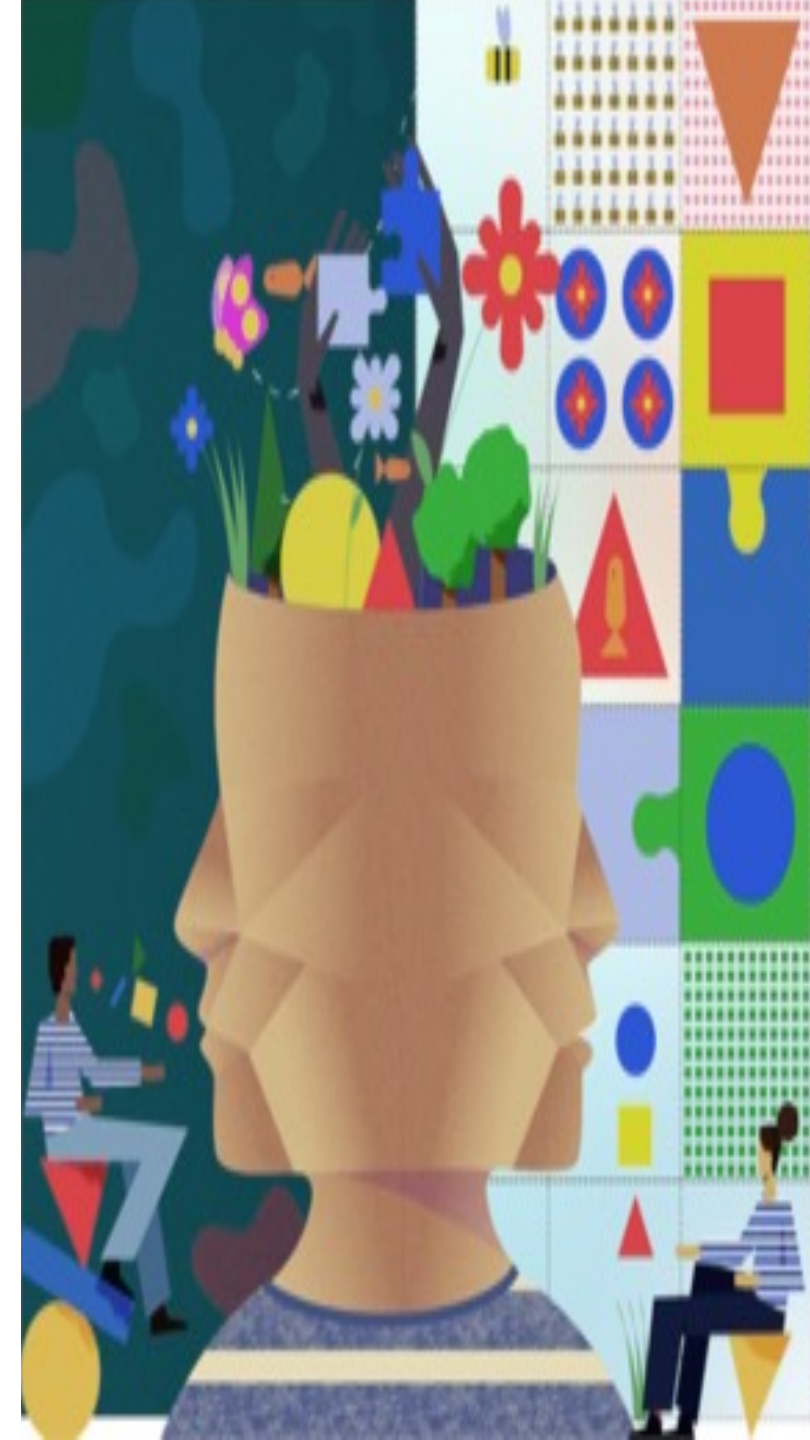
1. Describe your chosen topic in a paragraph. Imagine you are explaining it to someone who knows nothing about it.
2. Why you are interested in this topic? Think about what sparked your curiosity or passion for it
3. Consider where your chosen topic holds significance. Think about its relevance within specific contexts, fields, industries, or particular stakeholders.
4. Identify at least 3 aspects of the topic that you would like to explore further.
5. Formulate the above aspects into research questions.
6. Reflect on how the places you identified that the topic holds significance (as described in question 3) could benefit from answers to your research questions. Describe the theoretical, practical, and/or real-world applications of the answer to your research questions.



# Self-reflection: My interests

## Exercise B:

1. Go to **scholar.google.com**
2. Enter your general topic from **Exercise A - Question 1** into the search bar.
3. Examine the titles of the papers suggested by the search results.
4. Write down at least 3 subtopics that interested you related to your general topic that appeared in the search results. For example, if your general topic was “Use of ML models in sports analytics”, your subtopics might include “Performance Prediction and Player Evaluation”, “Game Strategy Optimisation” and “Injury Prevention”.
5. Based on the subtopics identified, pick one that interested you the most and detail what you want to learn more about it. You may use the reflections from **Exercise A** to guide your choices here.
6. From the above, identify 3 papers on **scholar.google.com** that would help you starting to learn more about this subtopic.



# Writing an Abstract

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Keep it concise: rule of thumb 150-250 words

Keep it descriptive: do not evaluate or defend the research

Five Essential Elements of a Good Abstract:

1. Background, context and/or purpose of the research
2. Aims, objectives and/or research questions
3. Methods or methodology
4. Results or major findings
5. Principal conclusions or implications



# Writing an Abstract

## Exercise C:

From the paper emailed to you in advance of the tutorial, summarise the following items:

1. Background
2. Objective
3. Methods
4. Key results
5. Principal Conclusion



# Writing an Abstract

**Title:** [Role of deep learning in early detection of COVID-19: Scoping review](#)

## A B S T R A C T

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*Background:* Since the onset of the COVID-19 pandemic, the world witnessed disruption on an unprecedented scale affecting our daily lives including but not limited to healthcare, business, education, and transportation. Deep Learning (DL) is a branch of Artificial intelligence (AI) applications, the recent growth of DL includes features that could be helpful in fighting the COVID-19 pandemic. Utilizing such features could support public health efforts.

*Objective:* Investigate the literature available in the use of DL technology to support dealing with the COVID-19 crisis. We summarize the literature that uses DL features to analyze datasets for the purpose of a quick COVID-19 detection.

*Methods:* This review follows PRISMA Extension for Scoping Reviews (PRISMA-ScR). We have scanned the most two commonly used databases (IEEE, ACM). Search terms were identified based on the target intervention (DL) and the target population (COVID-19). Two authors independently handled study selection and one author assigned for data extraction. A narrative approach is used to synthesize the extracted data.

*Results:* We retrieved 53 studies and after passing through PRISMA excluding criteria, only 17 studies are considered in this review. All studies used deep learning for detection of COVID-19 cases in early stage based on different diagnostic modalities. Convolutional Neural Network (CNN) and Transfer Learning (TL) were the most commonly used techniques.

*Conclusion:* The included studies showed that DL techniques has significant impact on early detection of COVID-19 with high accuracy rate. However, most of the proposed methods are still in development and not tested in a clinical setting. Further investigation and collaboration are required from the research community and health-care professionals in order to develop and standardize guidelines for use of DL in the healthcare domain.