

# Assessing Empathy in Medical Student Consultations: Could Machine Learning provide a viable tool for assessment?

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## The Problem

The importance of empathy in healthcare is well established, its presence has been noted to:

- Improve **trust, build rapport, strengthen relationships**
- Encourage and improve **patient engagement**
- Improve **clinical outcomes**

To support this, empathic communication is fostered during medical school via training and assessment. This can be challenging as empathy has many different interpretations and can be expressed in many verbal and nonverbal ways.

Objective Structured Clinical Examinations (OSCEs) are often used in UK Medical Schools to assess clinical skills. Despite their overall success concerns have been noted:

- Examiner variability / idiosyncrasy in scoring
- Inauthentic behaviour from students
- High cognitive load for examiners
- Focus on 'clinical tasks' rather than communication skills
- Post examination feedback may be low in detail

These challenges may be particularly prevalent when assessing empathy given its abstract nature. Existing methods to address these challenges have included examiner training and narrow assessment frameworks. These have merit but may exacerbate some of the challenges outlined above.

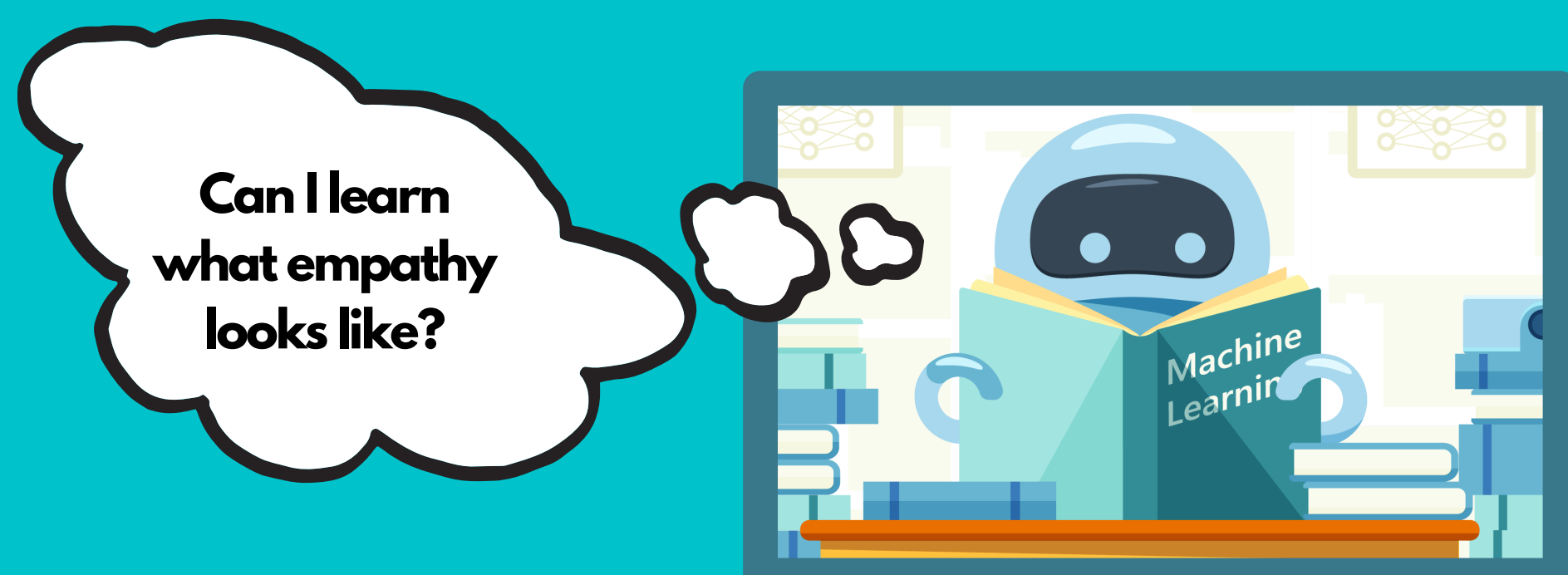
## A Technological Solution?

Machine Learning (ML) was introduced by Arthur Samuel in 1959. Samuel demonstrated that computers had the ability to learn without being directly programmed. ML is now widely used on platforms such as Netflix and Amazon, in facial recognition and cybersecurity, in translation and voice-computer dictation and in some healthcare settings.

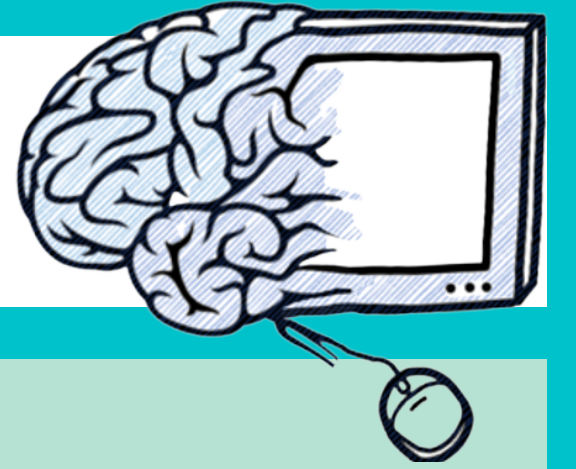
**How does a computer learn without being programmed?**

A core component of ML are mathematical algorithms which are used to learn or uncover patterns in data which may then be used to make predictions on new data. Creation of algorithms starts with a 'training dataset'. These are sets of labelled or coded information from which the computer can 'learn' and then generate an algorithm.

**This PhD aims to begin the compilation of a training dataset of empathic behaviour**



## PhD Study 1



### Aims

- To begin the groundwork of developing a labelled training dataset which can then be used to generate a ML algorithm for empathic nonverbal behaviour (beyond this PhD).
- To identify / label the behaviours and patterns of behaviour noted to be empathic in medical consultations.
- To explore the challenges of labelling empathic behaviour in recorded consultations.

### Methodology

Using a qualitative methodology and underpinned by Social Constructionism, this study will use **video-stimulated interviews** with **medical students, clinical tutors and simulated patients** from Keele University (n=15-20).

In these interviews the participants will be encouraged to explore and **identify the empathic behaviour that they observe** in a selection of medical consultations taken from the TV programmes 'GPs Behind Closed Doors' and '999: Critical Condition'.

Analysis of the interviews will then be undertaken using Braun & Clark's 6-step method for **Thematic Analysis**.

## Next Steps...

Collection of additional labelled data from a wider audience and exploration of the ease of behavioural labelling in video recordings.

**Study 1**

**Study 2**

*(In development)*

Development of a training dataset focussing on empathic behaviour

Development of ML algorithm

Use of ML to support OSCEs

Likely to be post PhD