

Student Presentation Abstracts

Anthropomorphic Algorithms **Tom Wallis – 5th year Computing Science**

Abstract: Interacting with our computers has always been cold and impersonal. What if that could change?

Computer science research has produced software - algorithms - which produce human-like behaviour in a computer system like an artificial intelligence. This software, termed 'anthropomorphic algorithms', guides an AI's behaviour in a human-like way. Examples of this behaviour might be an understanding of trust, comfort, and reputation; my own research is on using responsibility models to guide an AI's behaviour.

It's clear that, as this research becomes more advanced, it will affect all sorts of fields in exciting ways. Philosophical questions arise: if a computer can have feelings and empathise, is it immoral to treat it badly? If a city can identify distress and panic after a crime, might it alter the environment on the citizens' behalf? If your phone has an understanding of regret, should it stop you from leaving your ex voicemails when you're drunk?

There are some of the uses anthropomorphic algorithms might have in disciplines outside of computer science, and the potential is unbounded. With all of this potential impact, it's important to begin to explore the interdisciplinary impact of these algorithms. What fields might be impacted by these developments - and how? It is becoming increasingly important, and increasingly valuable, to explore the applications of computers with human traits outside of computer science research.

The Brain/Heart Relationship **Eleni Christoforidou – 4th year Neuroscience**

Abstract: What if something your body does every day – something as simple as your heartbeat – could predict your risk of developing mental health problems in the future?

Many think of the body as a simple machine that can be separated into independent parts. Your heart pumps blood, your brain does your thinking, your lungs provide you with oxygen. But there are much more complex interactions between our brains, hearts, and all other parts of our body, and no single system is truly independent.

My research focused on the differences in heart function between healthy people and those with a mental health problem. I investigated heart rate variability – the normal variation in the time interval between adjacent heart beats – in people with psychosis, and specifically schizophrenia.

Schizophrenia affects approximately 24 million people worldwide and is a major cause of disability, with psychotic symptoms being the third most disabling condition after quadriplegia and dementia. Prevention is currently difficult as there are no reliable ways to detect an early onset of the disorder. However, if differences in heart rate variability turn out to be present before the onset of any symptoms, then a quick and easy simple electrocardiogram could be a good predictor of any subsequent development of psychosis. In this way a much earlier intervention could be initiated which would result in better prevention and treatment outcomes

Greater Manchester Devolution

Chris Barlass – 4th year Politics & Public Policy

Abstract: England is arguably one of the most centralised developed countries in the world, the transfer of power to Greater Manchester's authorities and the establishment of a 'metro-mayor', represents an important change in English regional governance. Increased levels of democratic participation are expected, with the creation of potentially the most important English politician outside of London with a significant personal mandate.

The powers entrusted include: a £6bn health budget focused on creating an integrated health and social care system; devolution of transport, enhancing cooperation with government on infrastructure; control of business rates, enabling the creation of a business-friendly environment.

The research conducted evaluated the scope of the powers, political engagement and familiarity, and whether the powers correlate with the policy priorities of the electorate. If successful, it may serve as a model for increasing political engagement in a time of 'anti-politics', in addition to being replicated across multiple cities within the UK; creating an increasingly fragmented system of regional politics that could significantly influence our lives and surroundings.

(Re)-Defining the Post-Colonial Context

Isabel Khine – 2nd year English Literature

Abstract: History is often defined as being exactly that - historical, a remnant of the past, but although the armed forces may have retreated, the ideological impact lives on. General consensus may state that officially, the sun has set on many an empire, but imperialism (by its very insidious nature) cannot be defined by "start" and "end" dates.

The current issue with the study of "post-colonial" literatures is the ironically limited scope of the term "post-colonial" itself to define various aspects of multitudinous non-Western societies. Far from being relegated to the dregs of history, imperial ideals are upheld whenever we step into the lecture hall, as university courses are far too comfortable with curricula that tokenises that which is meant to "decolonise" thought. However, so long as we continue to be critical of our actions, and the actions of our predecessors, we continue the developmental process of human history. Imperialism is an uncomfortable topic of discussion, and I hope to exemplify through this presentation that such discomfort must be felt for progress to be made both within the university system and wider society.

Sex Differences Underlying Cardiovascular Disease

Alice Main – 4th year Pharmacology

Abstract: The pulmonary circulation is a division of the cardiovascular system where the right side of the heart pumps oxygen-poor blood out to the lungs, for it to become oxygenated when we breathe in, following which it is delivered back to the heart, to be distributed throughout the body. Pulmonary arterial hypertension (PAH) is a rare disease in which the arteries that carry the blood from the heart to the lungs are occluded, and therefore reduce in size, leading to a build-up of pressure in the pulmonary circulation. This means the right side of the heart must work harder than usual to send the blood out through the smaller arteries to the lungs, something it is not designed to do - consequently, it will fail resulting in death.

In PAH, women are much more likely to develop the disease than men, with ratios as high as 4:1 reported - this is why my study has focused on looking at the sex differences in the cells and chemical mediators thought to be involved in the occlusion of the arteries in this disease. Sex comparisons studies such as this are rare - much research, not just in this field but in science altogether, is conducted exclusively in male animals or cells - or the sex is not even specified. My research shows that sex has significant implications in the understanding of PAH and its treatment and highlights the importance of taking sex into consideration in research.