UNFAMILIAR FACE IDENTIFICATION GROUP CONFERENCE

2024

HOSTED BY UNSW SYDNEY

ufig

FEBRUARY 1ST AND 2ND, 2024
LAW BUILDING UNSW

UNSW SYDNEY

UNSW KENSINGTON CAMPUS MAP

F8 Law Building: UFIG Conference (Law Theatre, G02)

H11 Home Ground Kiosk: Optional coffee before conference

F21 The Lounge: Dinner Level 11, Library Building (entry via rear)

E6 Roundhouse: Optional drinks after conference

N18 Barker Street Parking: Closest parking

UNSW Anzac Parade: Closest light rail stop (L3)

UNSW SYDNEY

INTRODUCTION

Welcome to the 10th Unfamiliar Face Identification Group Meeting. UFIG aims to bring together delegates from government, police, industry and universities to discuss key issues in unfamiliar face identification in an informal setting.

The first UFIG in 2013 was attended by around 30 delegates from 7 organisations. Over the years, we have seen these numbers grow substantially. Our delegates now come from a wide range of institutes, industries, and organisations representing academic researchers, various practitioners, users and developers of face identification systems, and scholars reflecting on the legal implications of face identification.

We are excited to be back in person for UFIG2024. This year, UFIG has attracted such a range of delegates, many of whom will be travelling internationally to join us. We believe that the popularity of this meeting stems from the broad interest in this topic. It is of academic interest to researchers in the field of face recognition and of practical significance to those who use these systems to identify customers, passengers, citizens or offenders.

As always, we have allocated 10 minutes to each presentation with 10 minutes after each talk for discussion. We hope that you will feel able to contribute your perspective to these discussions as they are an essential part of UFIG. This year we are also hosting a canapes and drinks session on the first night of the conference. During this dinner, we hope to give attendees a chance to network and discuss among delegates over some food and refreshments.

Australia continues to make important contributions to applied face processing research and policy. We believe that the UFIG meeting has played a role in developing and maintaining the relationships that result in these contributions, and are very grateful for your contribution to this important endeavour. Thank you for joining us.

David White, Richard Kemp, Alice Towler, James Dunn & Monique Piggott

CONTENTS

OVERVIEW

THURSDAY 1ST FEBRUARY, 2024

8:30AM - 9:25AM	**Coffee and Catch-up** *Home Ground Kiosk UNSW*
9:30AM - 10:00AM	**Registration** *Law Theatre G02*
10:00AM - 11:15AM	**Session 1**
12:00PM - 1:15PM	**Session 2**
2:15PM - 3:30PM	**Session 3**
4:00PM - 5:15PM	**Session 4**
5:45PM - 7:45PM	**Canapes and Drinks** *The Lounge UNSW*

FRIDAY 2ND FEBRUARY, 2024

9:00AM - 9:55AM	**Coffee and Catch-up** *Home Ground Kiosk UNSW*
10:00AM - 11:00AM	**Session 1**
11:30PM - 1:10PM	**Session 2**
2:10PM - 3:55PM	**Session 3**
4:00PM - 6:00PM	**Informal Drinks** *The Roundhouse UNSW*

SCHEDULE

THURSDAY 1ST FEBRUARY 2024

PRE-CONFERENCE

8:30AM - 9:25AM	Coffee and catch-up	*The Home Ground Kiosk*
9:30AM - 10:00AM	Registration	*Law Theatre, G02 Law Building*

SESSION 1

Time	Topic	Speaker
10:00AM - 10:15AM	Introduction	Prof Richard Kemp *UNSW*
10:15AM - 11:15AM	Keynote Presentation: *The establishment of a facial examination team – Lessons learnt and future challenges*	Jakob Dam Glynstrup *Danish National ID Centre*

Morning Break 11:15AM - 12:00PM

SESSION 2

Time	Topic	Speaker
12:00PM - 12:25PM	*Forensic Facial Examination – transparency and uniformity in casework*	Trine Edvardsen *Danish National ID Centre*
12:25PM - 12:50PM	*Generalisation of perceptual expertise amongst face and forensic examiners*	Dr Bethany Growns *University of Canterbury*
12:50PM - 1:15PM	*Measuring facial feature importance among forensic examiners*	Dr Carina Hahn *National Institute of Standards and Technology*

Lunch Break 1:15PM - 2:15PM

SCHEDULE

THURSDAY 1ST FEBRUARY 2024

SESSION 3

Time	Topic	Speaker
2:15PM - 2:40PM	*Essentials for the future of biometrics*	Paul Cross *Biometrics Institute*
2:40PM - 3:05PM	*Unfamiliar Face Identification at the U.S. Department of Homeland Security, Office of Biometric Identity Management*	Dr James Wayman *Biometric Identity Management - U.S. Department of Homeland Security*
3:05PM - 3:30PM	*AFP Craniofacial Reconstructions*	Desirée Davis *Australian Federal Police*

Afternoon Break 3:30PM - 4:00PM

SESSION 4

Time	Topic	Speaker
4:00PM - 4:25PM	*Legal Update: Recent Australian Cases*	A/Prof Mehera San Roque *UNSW*
4:25PM - 4:50PM	*Images, investigators and identification: Problems with context, cognitive bias and double-counting*	Prof Gary Edmond *UNSW*
4:50PM - 5:15PM	*Breaking Barriers: Overcoming Privacy Challenges in Child Safety - A Provocative Case Study*	Abbas Bigdeli *Aer Vision Technologies*

Dinner 5:45PM - 7:45PM

The Lounge UNSW

Library Walk, Level 11, Library Building, F21, Entry From Rear
RSVP Only

If needed, contact Monique on (+61)448 436 004

SCHEDULE

FRIDAY 2ND FEBRUARY 2024

PRE-CONFERENCE

9:00AM - 9:55AM	Coffee and catch-up	*The Home Ground Kiosk*

SESSION 1

Time	Topic	Speaker
10:00AM - 11:00AM	Keynote Presentation: *Why the world needs more UFIGs*	A/Prof David White *UNSW*

Morning Break 11:00AM - 11:30AM

SESSION 2

Time	Topic	Speaker
11:30AM - 11:55AM	*(Un)Explainable AI: Can human operators benefit from explanations provided by Face Recognition algorithms*	Prof Richard Kemp *UNSW*
11:55AM - 12:20PM	*The effect of trust in automation on the algorithm-assisted one-to-one face matching performance of novices*	Dr Daniel Carragher *University of Adelaide*
12:20PM - 12:45PM	*The impact of AI systems on facial recognition*	David Chadwick *Unisys*
12:45PM - 1:10PM	*Combining psychology with machine learning to identify AI imposters*	A/Prof Amy Dawel *Australian National University*

Lunch Break 1:10PM - 2:10PM

SCHEDULE

FRIDAY 2ND FEBRUARY 2024

SESSION 3

Time	Topic	Speaker
2:10PM - 2:35PM	*Where's Wally in the Wild*	Dr Alice Towler *University of Queensland*
2:35PM - 3:00PM	*From Lab Specs to Real-World Checks: Taking the Science of Eye Gaze into Everyday Interactions*	Dr James Dunn *UNSW*
3:00PM - 3:25PM	*Familiar Face Recognition Based on Three-Dimensional Shape: Investigating the Effects of Viewpoint, Apparent Motion, and Surface Reflectance*	Kateryna Marchenko *University of Wollongong/ UNSW*
3:25PM - 3:50PM	*It's Written all Over Their Face: Job Candidates are Remembered as Looking More Competent if Their Resume Conveys Competency*	Emma Gaston *Macquarie University*
3:50PM - 3:55PM	Concluding remarks	Prof Richard Kemp *UNSW*

Informal Drinks from 4:00PM

The Roundhouse UNSW

International Rd Roundhouse Building, E6

If needed, contact Monique on (+61)448 436 004

ABSTRACTS

THURSDAY

SESSION 1: KEYNOTE PRESENTATION

THE ESTABLISHMENT OF A FACIAL EXAMINATION TEAM – LESSONS LEARNT AND FUTURE CHALLENGES

Jakob Dam Glynstrup
The Danish National ID Centre

The Danish National ID-centre established its facial examination expert team in 2019. From the outset, a key strategy was to engage with both academia and government agencies to develop robust procedures based on best practices and scientific research. The challenge has been to strike the balance between upholding the accuracy and precision offered by research, while ensuring practical applicability in the daily operations of a government agency. This presentation delineates the overall procedures implemented by the Danish National ID-centre, delving into the considerations that underpins them. Lastly the presentation ventures into foresight, exploring future challenges on the horizon.

SESSION 2

FORENSIC FACIAL EXAMINATION – TRANSPARENCY AND UNIFORMITY IN CASEWORK

Trine Edvardsen
The Danish National ID Centre

Presenting results from a facial examination in a manner that is both transparent and easily understood for non-facial examiners such as first line staff or juries is a continuous challenge to forensic experts. In an effort to meet this challenge, and increase transparency and reproducibility, The Danish National ID Centre has developed exhaustive and effective procedural documents for facial examinations following best practice documents and guidelines. These documents are supported by a data model to assist the facial examiner in placement on the conclusion/opinion scale. By processing case data, including suitability for comparison, image quality and levels of visibility, the model supports the manual facial examination. The aim of the model is to introduce limitations to the subjective evaluation of a face comparison, by introducing overall objective parameters into the decision through the data model.

ABSTRACTS

THURSDAY

SESSION 2 (CONT.)

GENERALISATION OF PERCEPTUAL EXPERTISE AMONGST FACE AND FORENSIC EXAMINERS

Dr Bethany Growns
University of Canterbury, New Zealand

This talk presents data investigating whether the face-matching skill of face examiners generalises beyond their domain of expertise into other forensic pattern-matching tasks, alongside an overview of fingerprint and firearms examiners' skill in the same tasks.

MEASURING FACIAL FEATURE IMPORTANCE AMONG FORENSIC EXAMINERS

Dr Carina Hahn
National Institute of Standards and Technology (NIST)

Forensic facial examiners are advised to evaluate faces by describing and comparing their individual features (e.g., eyes, noses, mouths, etc.). The extent to which different facial features are used for determining identity in this forensic context is unknown. Our results show that some facial features are rated more similarly than others, but the large variability across images suggests feature "usefulness" may vary across facial comparisons. I will also show progress toward understanding forensic facial examiner (n = 18) preferences for viewing certain features in isolation over others when determining identity.

SESSION 3

ESSENTIALS FOR THE FUTURE OF BIOMETRICS

Paul Cross
Biometrics Institute

In an era of artificial intelligence and ubiquitous cameras, there is a pressing need for better collaboration, explainability, controls and education relating to biometric technology, with all usage following the Three Laws of Biometrics – (1) thorough policy and (2) process being implemented ahead of (3) technology deployment.

ABSTRACTS

THURSDAY

SESSION 3 (CONT.)

UNFAMILIAR FACE IDENTIFICATION AT THE U.S. DEPARTMENT OF HOMELAND SECURITY, OFFICE OF BIOMETRIC IDENTITY MANAGEMENT

Dr James Wayman
U.S.Department of Homeland Security

This short talk will discuss the use of facial identification within the Office of Biometric Identity Management (OBIM) of the U.S. DHS, including automated and manual methods. We will discuss new policy on the use of automated facial recognition and the 24/7 work of the Biometric Support Center for the manual adjudication of automated matches with derogatory outcomes.

AFP CRANIOFACIAL RECONSTRUCTIONS

Desirée Davis
Australian Federal Police

In 2023 the Australian Federal Police (AFP) launched their Craniofacial Reconstruction (CFR) capability. This capability assists in unidentified human remain cases where primary identifiers (DNA, fingerprints and dental) are unable to provide investigative leads. CFR involves the examination of skeletal remains, specifically the skull, to estimate the individual's appearance in life. The AFP utilise a modified version of the Manchester Method which was developed in the United Kingdom. This presentation will discuss the methodology utilised by the AFP and showcase completed cases.

SESSION 4

LEGAL UPDATE: RECENT AUSTRALIAN CASES

A/Prof Mehera San Roque
University of New South Wales

This talk will provide an update and summary of selected recent Australian cases involving the admission of expert evidence and/or interpretation of images, including Lang v The Queen [2023] HCA 29 and Lehrmann v Network Ten Pty Limited (Expert Evidence) [2023] FCA 1577. The decisions in these cases maintain the permissive approach of earlier decisions involving image interpretation evidence and confirm, again, the need for alternative institutional responses to the problem of (un)reliable expert evidence.

ABSTRACTS

THURSDAY

SESSION 4 (CONT.)

IMAGES, INVESTIGATORS AND IDENTIFICATION: PROBLEMS WITH CONTEXT, COGNITIVE BIAS AND DOUBLE-COUNTING

Prof Gary Edmond
University of New South Wales

The rapid rise in accessibility and portability of cameras has resulted in widespread reliance on the interpretation of images by analysts and investigators in criminal proceedings. This presentation explains why allowing investigators to give opinions as to identity on the basis of familiarity with images or suspects acquired during the course of an investigation is incompatible with mainstream scientific research and advice, and conducive to error. Such practices rest on the flawed assumption that investigators can reliably identify or recognise persons in images, articulate and document the basis of these "identifications", and avoid the risk of contamination (really cognitive bias) from their knowledge of, or exposure to, domain-irrelevant information. Jurors, who may be invited to conduct their own comparison between an image and the defendant in the dock, are similarly vulnerable to assuming the task is straightforward, as well as many of the contextual and cognitive biases confronting investigators. Using the facts and evidence in R v Yaryare [2020] EWCA Crim 1314 as a case study, this presentation will explain how case information available to investigators and imaging analysts informs their interpretations of images and is (re-)presented at trial and on appeal as independent support for their opinions. The presentation identifies substantial threats to fairness, proof and rationality and leads to the contention that only witnesses with demonstrable expertise should be permitted to testify as to the identity of persons of interest in images.

BREAKING BARRIERS: OVERCOMING PRIVACY CHALLENGES IN CHILD SAFETY - A PROVOCATIVE CASE STUDY

Abbas Bigdeli
AerVision Technologies Pty Ltd.

Discover an intriguing tale of how purported privacy concerns posed a hurdle in the adoption of Facial Recognition technology, potentially hindering the enhancement of safety and well-being for children in schools. In this presentation, we will analyse the ethical dilemmas arising from the implementation of Facial Recognition in schools, discussing contrasting viewpoints among stakeholders - administrators, parents, teachers, and the broader community. This will include exploring the balance between privacy concerns and the imperative to ensure a safe learning environment. Furthermore, we will take a deep dive into the pivotal instance where an individual's privacy advocacy impeded the adoption of Facial Recognition technology. We'll analyse the repercussions of such advocacy on technological advancement and the potential implications for child safety initiatives.

ABSTRACTS

FRIDAY

SESSION 1: KEYNOTE PRESENTATION

WHY THE WORLD NEEDS MORE UFIGS

A/Prof David White
University of New South Wales

Deep learning neural networks have led to large gains in facial recognition accuracy in recent years.In most applied scenarios, humans are required to work in tandem with this technology, and research shows that fusing human and AI decisions leads to optimal accuracy. This result implies that AI and humans are processing faces in different ways, and so contributing unique strengths to face identification tasks.In this talk I reflect on what these unique strengths are, why these differences in cognitive processing between human and machine system emerge and what this means for the role of humans in the future. A key goal for modern society is to find intelligent divisions of labour between human experts and AI technology. This must be informed by interdisciplinary research targeting fundamental understanding of cognitive processes in humans and AI systems, so that this understanding can be applied to real-world problems. This work will depend on communities like the Unfamiliar Face Identification Group.

SESSION 2

(UN)EXPLAINABLE AI: CAN HUMAN OPERATORS BENEFIT FROM EXPLANATIONS PROVIDED BY FACE RECOGNITION ALGORITHMS

Prof Richard Kemp
University of New South Wales

The increasing use of AI systems to support critical decision making in government and legal settings has led to calls for Explainable AI Systems which provide the user with both a decision, and an explanation of how this decision was reached. Although it is now possible to develop such systems, no one has tested whether human operators can understand and make use of the explanations produced. In this paper we will briefly describe a series of experiments in which we developed an explainable Face AI system and tested whether human operators would benefit from the provision of explanations presented in different ways. The results highlight that there is no advantage to using explainable AI (XAI) systems if the explanations they deliver are not understandable to the human operators working with the system. We will consider the implications of our findings for the use of AI Face recognition systems in legal decision making.

ABSTRACTS

FRIDAY

SESSION 2

THE EFFECT OF TRUST IN AUTOMATION ON THE ALGORITHM-ASSISTED ONE-TO-ONE FACE MATCHING PERFORMANCE OF NOVICES

Dr Daniel Carragher
University of Adelaide

Technological advances have seen facial recognition systems introduced into many face identification tasks. But these systems still typically require human involvement – which can range from oversight to actively using the technology as a decision-aid. Ideally, human involvement should improve the performance of the facial recognition system, with the human correcting (rare) system errors and accepting accurate system responses. However, our previous laboratory-based research showed that the one-to-one face matching performance of the average human-algorithm team was significantly worse than that of the same simulated algorithm alone. Here, I will present results from two new experiments. The first found that individual differences, including trust in automation, were related to the level of algorithm-assisted performance participants achieved in a one-to-one face matching task. The second found that trial-by-trial feedback increased trust in automation, which led to significant improvements in the performance of human-algorithm teams. Implications for human-algorithm teaming will be discussed.

THE IMPACT OF AI SYSTEMS ON FACIAL RECOGNITION

David Chadwick
Unisys

We are all aware of the growing role of facial recognition in society – some of it very well researched and tested, and some of it less so. This discussion will explore some of the work being done in industry (Red Hat) to use AI systems to attack, and defeat, facial recognition systems, as well as explore some of the ways to mitigate these attacks.

ABSTRACTS

FRIDAY

SESSION 2 (CONT.)

COMBINING PSYCHOLOGY WITH MACHINE LEARNING TO IDENTIFY AI IMPOSTERS

A/Prof Amy Dawel
Australian National University

Faces generated by Artificial Intelligence (AI) can fool most people, thus attaining an extraordinary level of realism. However, there remain observable differences between AI and human faces, which people can perceive but fail to use effectively. Here, we show how well-established psychological knowledge about person perception can be integrated with machine learning to identify AI-generated people. This research can lay the groundwork for tools that detect deep fakes and misinformation, which will be critical for protecting personal safety online and the security of our nation.

SESSION 3

WHERE'S WALLY IN THE WILD

Dr Alice Towler
University of Queensland

Sometimes police officers search for a target person – such as a known criminal or suspected terrorist – in a busy public place, like a stadium or airport. Errors in manhunts can have life-altering consequences for the public and everyone involved. Despite this, there has been no research on manhunts, so it is unknown how accurately people can conduct manhunts and what factors affect their accuracy. Here, I present a pilot study investigating this question.

ABSTRACTS

FRIDAY

SESSION 3 (CONT.)

FROM LAB SPECS TO PASSPORT CHECKS: TAKING THE SCIENCE OF EYE GAZE INTO EVERYDAY INTERACTIONS

Dr James Dunn
University of New South Wales

Advancements in technology and artificial intelligence have revolutionised the landscape of face recognition research, equipping researchers with innovative tools that provide fresh insights into face recognition in real-world conditions. This presentation shows our initial exploration using wearable eye-tracking technology and automated person detection to delve into how individuals perceive faces in their daily lives. Through this research, I will showcase the possibilities offered by these cutting-edge technologies and how they create opportunities to take research in unprecedented directions, going from the lab to the world and back again.

FAMILIAR FACE RECOGNITION BASED ON THREE-DIMENSIONAL SHAPE: INVESTIGATING THE EFFECTS OF VIEWPOINT, APPARENT MOTION, AND SURFACE REFLECTANCE.

Kateryn Marchenko
University of Wollongong/University of New South Wales

Past findings suggest that 3D laser scans of familiar faces devoid of pigment are difficult to recognise (Bruce et al., 1991). Unfamiliar faces can be matched across viewpoints based on both 3D shape and reflectance information alone (e.g., O'Toole et al., 1999). We tested the recognition of previously familiar faces based on shape viewed under conditions chosen to facilitate 3D shape perception – namely, apparent motion and angled viewpoints. The stimuli were 3D scans of celebrities, that were either uniformly coloured or assigned informative pigment. The recognition accuracy of the uniformly coloured stimuli was especially poor, even in angled and apparently moving views, and substantially lower than when informative pigment was present. The effect of viewing conditions was similar for both types of stimuli, including a small advantage for the multiple over the single view conditions. These results suggested that 3D shape in isolation is insufficient to accurately recognise familiar faces.

ABSTRACTS

FRIDAY

SESSION 3 (CONT.)

IT'S WRITTEN ALL OVER THEIR FACE: JOB CANDIDATES ARE REMEMBERED AS LOOKING MORE COMPETENT IF THEIR RESUME CONVEYS COMPETENCY

Emma Gaston
Macquarie University

Spontaneous trait inferences involve making character inferences based solely on facial features. Previous research demonstrates that these misattributions are largely homogenous across the population; we tend to perceive the same facial characteristics as portraying someone as competent or incompetent. Given this oft-observed effect, we aimed to investigate whether semantic information conveying competency or incompetency influences people's memory of faces in hiring contexts. In Study 1, participants were asked to view neutrally competent faces, then read application excerpts about that face that either implied competency, incompetency or neutral competency. Participants were then asked to recognise the initial neutral face in amongst seven faces which had been systematically altered to vary from highly incompetent to highly competent. The results determined that hiring documentation implying competence resulted in participants remembering faces as more 'competent-looking' than when hiring documentation conveyed incompetence or even neutral competence. Study 2 employed the same paradigm but instead with highly competent and incompetent looking faces paired with neutral application excerpts. Here, hiring intentions were used as an outcome to determine if faces were able to bias hiring decisions, but no significant effects were observed. Together these fundings provide some initial insight into how our visual judgements can be influenced by semantic cues and demonstrates how language can modulate recognition in a hiring context. The mixed findings caution the possible importance of visual trait attributions in recruitment and emphasize the importance of adopting a triangulated approach to minimise biases and promote equitable hiring practices.

FURTHER INFORMATION

Connecting to Wi-Fi

Step 1: Navigate to Wi-Fi settings and connect to the 'UNSW Guest' Network.

Step 2: You will be redirected to a registration screen and be asked to provide your name and e-mail details. You will also need to accept the T&Cs and Privacy Statement before proceeding. If you are not automatically redirected to this portal, go to the following link: https://guest.wireless.unsw.edu.au/guest/guest-email-login.php

Step 3: After clicking Register, you will then land on a welcome screen, which says you have temporary (approximately five minutes) access, before being redirected to the UNSW home page. You need to promptly navigate to your mail account.

Step 4: Use the Activation Link from the email to activate the access.

Step 5: You will land on a confirmation screen asking you to confirm (or reject) Wi-Fi access.

Step 6: After choosing, you will be redirected to a final screen confirming or denying Wi-Fi access to your device. You will have eight hours of continuous access. After that time, you can repeat the registration process as often as you wish.

Event Organisers

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FURTHER INFORMATION

Food on Campus

LOWER CAMPUS

University Terraces (B8)

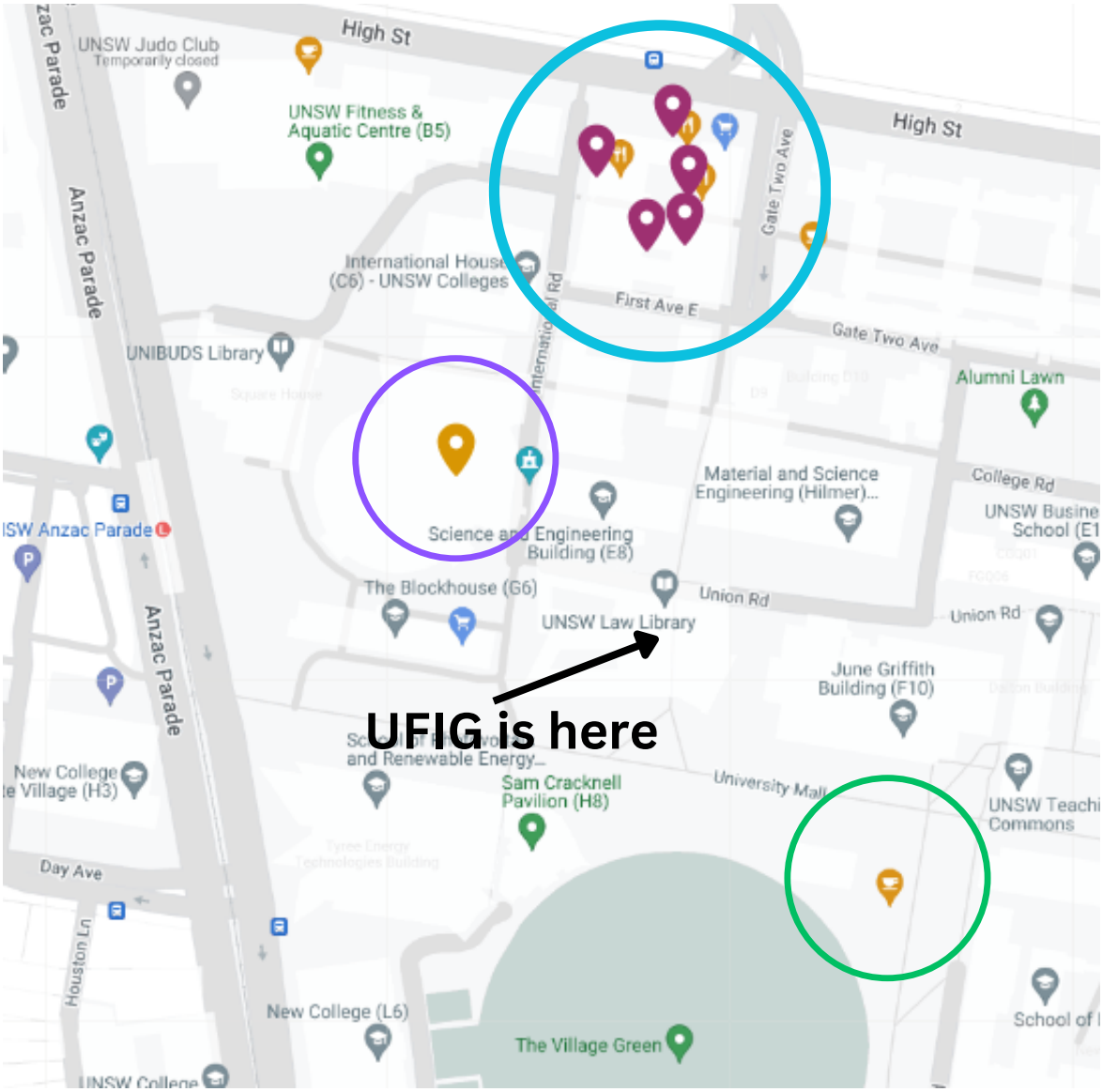
- Guzman Y Gomez
- Mamak Village
- Sharetea
- Stellini Pasta Bar
- Yallah Eat Pita, Kebab & Shawarma Bar

The Roundhouse (E6)

- Thirsty Burger & UniBar at The Roundhouse

The Village Green

- Home Ground Kiosk



FURTHER INFORMATION

Food on Campus

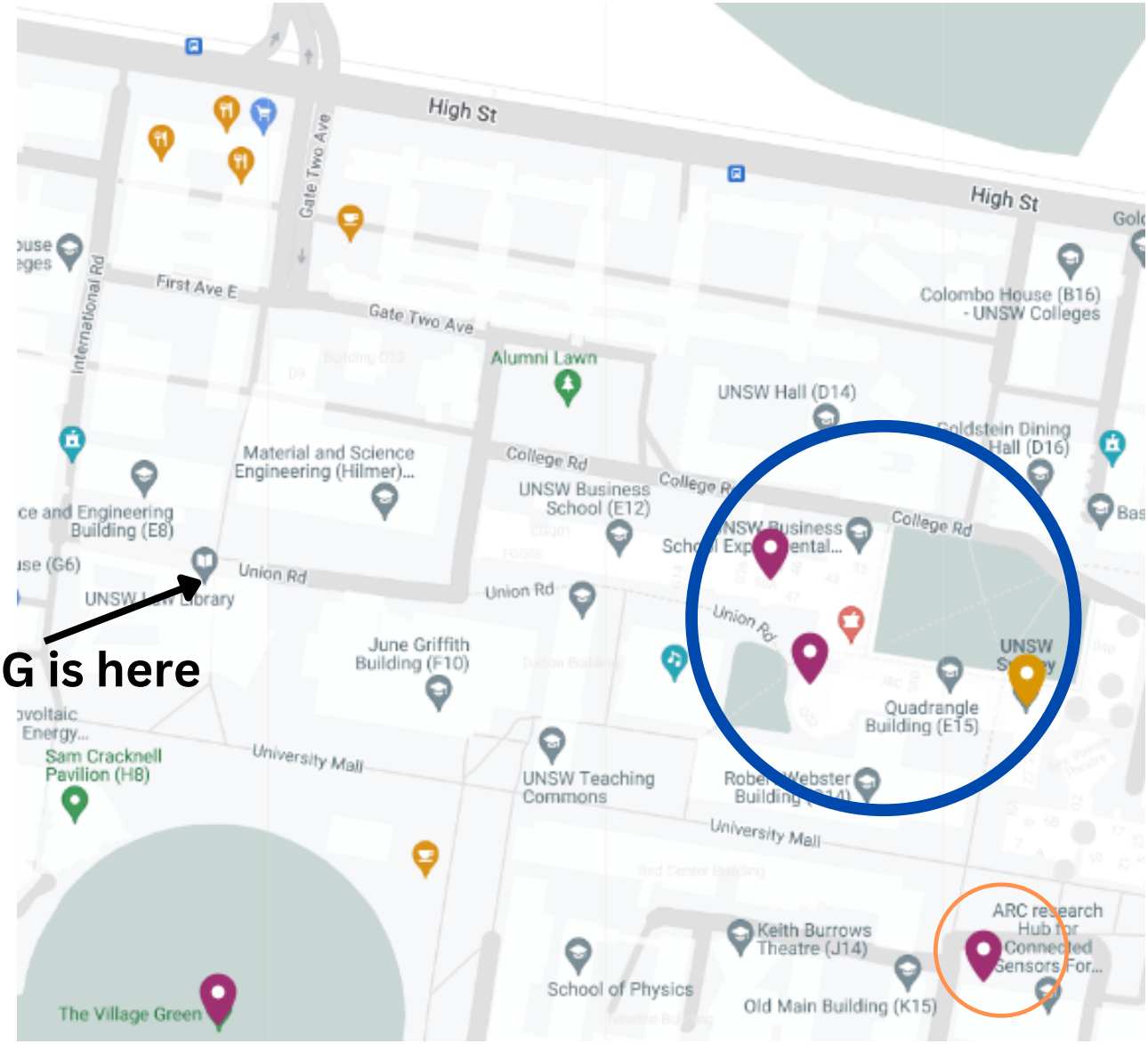
MIDDLE CAMPUS

Quadrangle Building (E15)

- PappaRich
- Plume Cafe (near UNSW Bookshop)
- Quad food court

Ainsworth Building (J17)

- Coffee on Campus



FURTHER INFORMATION

Food on Campus

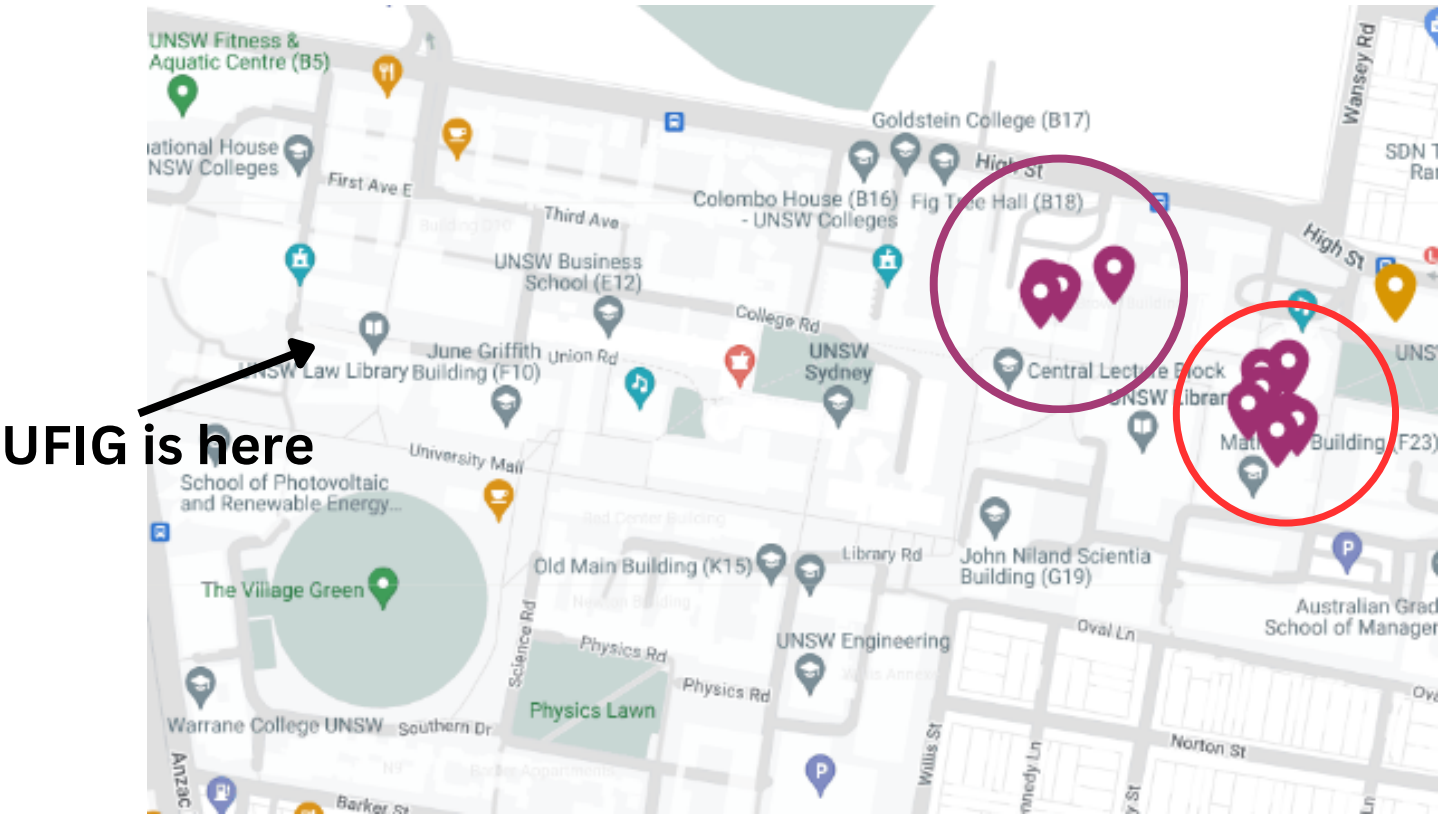
UPPER CAMPUS

Morven Brown Building (C20) (Lower Ground Floor)

- Boost Juice
- Southern Wok
- Subway

Mathews Food Court/Arcade/Pavillion (E24a)

- Cafe Brioso
- Classic Kebab
- Gradueat
- Laksa Delight
- Stockmarket
- Sushi Roll
- Tropical Green (Pho House)



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ATTENDING ORGANISATIONS

GOVERNMENT/INDUSTRY

AerVision Technologies

Australian Federal Police

Amazon

Biometrics Institute

Cognitec

Danish National ID Centre

Department of Defence

Department of Foreign Affairs and Trade

Department of Home Affairs

Defence Science and Technology Group

Kudos Knowledge

NEC Australia Pty ltd

NIST

NSW Police Force

SITA

South Australia Police

Transport for NSW

Unisys

US Department of Homeland Security

Victoria Police

ACADEMIC INSTITUTIONS

Australian National University

Macquarie University

Swinburne University of Technology

University of Adelaide

University of Canterbury

University of Greenwich

University of New South Wales

University of Newcastle

University of Queensland

University of Sydney

University of Wollongong

Western Sydney University

York University