# SICSa\*

The Scottish Informatics & Computer Science Alliance

### THE 13<sup>TH</sup> ANNUAL SICSA PHD CONFERENCE #sicsaconf22

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## WELCOME AND INTRODUCTION

It is my great pleasure to welcome you to this year's 2022 SICSA Conference at Glasgow Caledonian University. A sincere thank you to SICSA and the organising committee for setting up this conference, with special thanks going to Aileen Orr, Anastasia Fliatoura and Tiffany Babey from the SICSA executive team who worked tremendously to ensure a successful conference.

We have planned an exciting programme. Two fascinating keynotes, our annual poster presentation and competition, where PhD students are showcasing their work, reverse Vivas and several comprehensive parallel workshops ensure that there is something interesting for everyone.

Conferences are places to make new connections, to present your work and get innovative ideas. As you are all researchers from different Scottish institutions, we would encourage you to discuss the opportunities and challenges of your research and explore collaborations, even if your research areas are different. Especially in a wide-ranging field like computing, this cross-disciplinary collaboration is of high importance. We hope that you enjoy the programme over the next few days, extend your networks, have interesting discussions and have an overall great time.

> Jacob Koenig Conference Academic Chair, 2022.

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#sicsaconf22

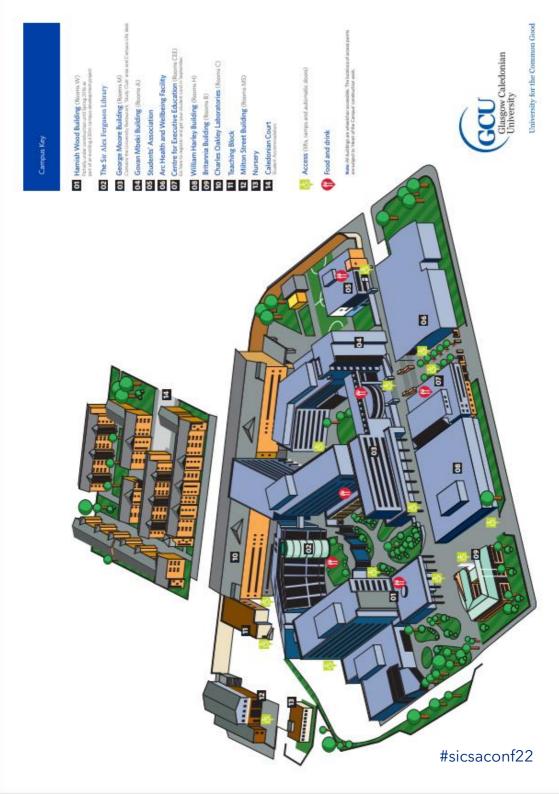
### **SCHEDULE DAY 1**

TIME	SESSION	LOCATION	
12:00-12:30	Registration with Lunch & Poster drop-off	George Moore Building	
12:30-12:40	Welcome and Keynote Introduction		
12:40-13:40	Keynote Talk: Stephen O'Neill	Deeprose Lecture Theatre	
13:40-14:45	SICSA Education: Learning & Teaching Network Launch	(A005)	
14:45-15:00	Coffee Break/Posters	George Moore Restaurant	
15:00-15:30	<b>Plenary</b> : SICSA Peer Support Network: Keeping Mentally Healthy	Deeprose Lecture Theatre (A005)	
	Workshop: Intellectual Property	Workshop Room A426C	
15:30-16:45	Workshop: CV Improvement	Workshop Room A426F	
	<b>Workshop</b> : Build Your Own: Bricolage for Blended Spaces	Room notified on the day	
	Workshop: Education	Workshop Room A426	
	Panel Session: Early Career Research	Deeprose Lecture Theatre (A005)	
16:45	Closing Talk	Deeprose Lecture Theatre (A005)	
17:00	Accommodation Check-in	Student Accommodation	
18:15-19:30	PhD Careers Fair	Merchants House (Level 5)	
19:30-22:00	Conference Dinner 3	Merchants House Dining Hall	

### **SCHEDULE DAY 2**

TIME	SES	SION	LOCATION
09:00-09:30	Registration with Coffee/Posters		George Moore Building
09:30-09:40	Welcome and Start Up Session Introduction		Deeprose Lecture Theatre
09:40-11:30	The Journey from Research to Tech Start- Up		(A005)
11:30-12:15	Poster Session		George Moore
12:15-12:45	Lunch		Restaurant
12:45-14:00 Reverse Viva	I5-14:00 Reverse Viva	Dr Sandy Brownlee	Workshop Room A426
		Dr Jessica Enright	Workshop Room A426C
		Dr Michael O'Boyle	Workshop Room A426F
14:00-14:30	Best Paper & Posters Awards		
14:30-15:30	Keynote Talk: Per Hammer		Deeprose Lecture Theatre
15:30-16:00	Best Dissertation Talks & Awards		(A005)
16:00	Closing & Thank You		
		#sicsaconf2	

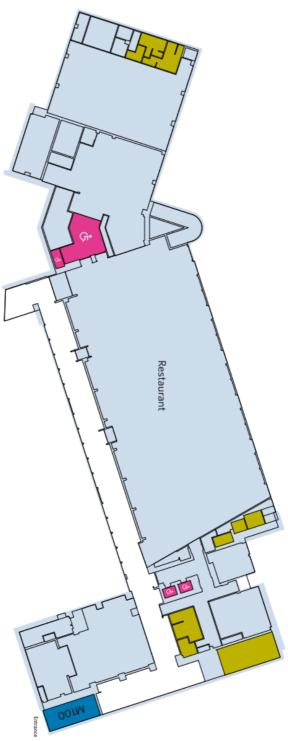






George Moore Building (Ground Floor)







Accessibility Toilet
 Female Toilet
 Male Toilet
 Unisex Toilet

Gender Neutral Toilet
 Staff Female Toilet
 Staff Male Toilet
 Staff Unisex Toilet

Walkway to Saltire Building



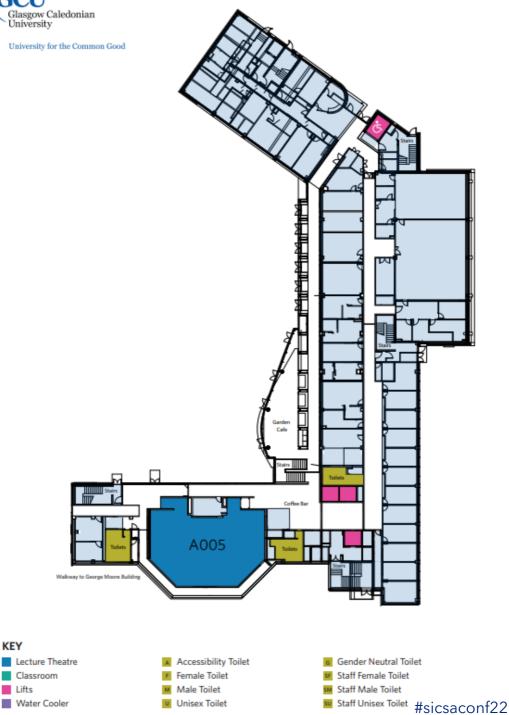
KEY

Classroom

Lifts

University for the Common Good

#### Govan Mbeki Building (Ground Floor)



### **TRAVEL TO CONFERENCE**

Glasgow Caledonian University (GCU) is ideally situated in the City Centre. GCU is a 10 minutes walk from Glasgow Queen Street railway station and Buchanan Street Bus and Subway stations. Glasgow Central station is also a short distance away.

Delegates should be aware that train journeys are currently being impacted by strikes across Scotland. These are likely to have an impact on your journey if you are travelling to Glasgow by rail. We would encourage you to keep updated and plan extra time for your journey.

We strongly encourage delegates to use public transport to travel to the conference as there is no free parking in Glasgow City Centre, however the car park across from GCU has a reduced fee for delegates should you need to use it.

#### WATER AT THE CONFERENCE

Water coolers are placed around the conference venue. We encourage all delegates to minimize their use of plastic bottles by using reusable bottles during the conference.

#### **PRAYER ROOMS**

The GCU prayer room will be in room A427 on the 4<sup>th</sup> floor of the Govan Mbeki building (just past the workshop rooms). For directions to prayer room at the Merchants House, please refer to a SICSA organising member while at the venue and they will be happy to help.

#### WIFI ACCESS

Eduroam will be available everywhere on the GCU campus and your devices should automatically connect if you have connected to Eduroam on your home campus. To connect to the guest wireless from your Wi-Fi device, follow these steps: 1. Select WiFi Guest from the Wi-Fi network list. 2. Open your preferred web browser and select Get Online at Glasgow Caledonian University. 3. Enter all the required information and select Continue. More detailed descriptions are available at: https://www.gcu.ac.uk/aboutgcu/supportservices/itservices/wirelessaccess/guestwifi The QR code on the back of this brochure can also direct you to the link above.

### ACCOMMODATION

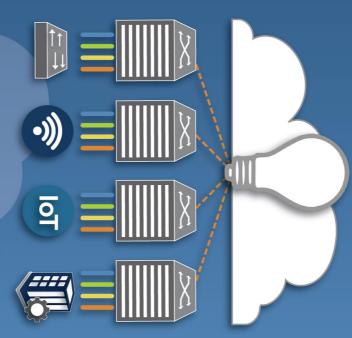
The accommodation is situated to the back of the campus. Signage will be place to direct delegates. A storage room will be available during the conference on the **4<sup>th</sup> floor of the Govan Mbeki** building.

Check-in will be available between **12:00 and 12:30** during registration and check out is at 10am on the 29<sup>th</sup> June. Breakfast vouchers will be handed out during registration.

The rooms are single occupancy, shared kitchens are available for delegates not participating in the conference dinner and toiletries will be provided.



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#### **Industry Placements for PhD students**

This programme provides the opportunity to undertake a paid industry placement:

- Gaining insight into, and experience of, working in an organisation and applying your research and technical skills in a 'real-world' setting to solve business specific problems
- Accessing employability skills training provided by an experienced team at The Data Lab
- Applying and developing skills and experience in an area relevant to your PhD and interests

#### Who can apply?

The programme is open for application to PhD students in Scotland who are undertaking data/AI focussed research and have the Right to Work in the UK.

Projects typically require skills in areas such as data science, data engineering, data analysis, business analysis and artificial intelligence but we are happy to discuss eligibility with any students who are unsure of the relevance.

Successful applicants will be matched to a suitable project with a host organisation where they will undertake a paid placement project for a maximum of 70 hours (10 days).

Placements are flexible in duration and may take place over a period of between 2 weeks up to a maximum of 8 weeks (e.g. 1 day per week). The working pattern will be agreed with the host organisation prior to the placement commencing. The placements can take place at any time during the calendar year to suit the schedules of both the student and host organisation.

#### Find out more

If you have any questions or are interested in applying to the programme please chat to us at our event stand or contact: **placements@thedatalab.com** 

### KEYNOTE: **Stephen O'neill**

When: Where: Tuesday 28<sup>th</sup> June, 12:40 - 13:40 Deeprose Lecture Theatre (A005), Govan Mbeki Building



Stephen is a career civil servant specialising in creative policy development and has worked on a range of policy issues over the course of his career. He was the lead policy advisor to the 2015 Commission on Widening Access, whose recommendations have succeeded in significantly improving the socioeconomic diversity of Scotland's

universities. On social security policy, working directly with people in receipt of benefits, he led the development of the Social Security Charter which sets out enforceable rights for people accessing the Scottish social security system. The Charter was praised by the UN as a leading example of citizen-led, rights based policymaking. Most recently he has focused on economic policy, specialising in highgrowth start-ups and working closely with ex-Skyscanner COO Mark Logan to implement the Scottish Technology Ecosystem Review.

#### KEYNOTE ABSTRACT

Despite exceptional universities, world-class research, thriving corporate industries and a cultural tradition of entrepreneurship Scotland is not a high performing start-up nation. This session will explore the reasons for this, how performance can be turned around and the scale of the economic prize for doing so.

### KEYNOTE: PER HAMMER

When: Where: Wednesday 29<sup>th</sup> June, 14:30 - 15:30 Deeprose Lecture Theatre (A005), Govan Mbeki Building



#### **Computational Thinking Considered Harmful?**

Per Hammer is a Norwegian Glaswegian with over 25 years of experience in the software industry, including 15 years as a software engineering lead and agile coach. He

is an Agility Lead at J.P. Morgan Global Technology, and a Professor in Practice of Collaborative Software Engineering at the University of Glasgow

#### **KEYNOTE ABSTRACT**

Since its introduction in 2006, "computational thinking" has been used to redesign existing curricula to make them more attractive to computing science students, and to develop new courses aimed at audiences who would not otherwise be exposed to computer science. In this talk, Per will discuss how an over-reliance on computational thinking limits software engineers' view of sustainability, explore a brief history of sustainability in software engineering, and propose different approaches for software engineers who wish to consider sustainability more widely in their work.

#### POSTER DROP OFF

For delegates that are displaying a poster at the conference, all posters should be dropped off at registration on Day 1 by 12pm. The Poster Committee will hang your poster for you. All posters will remain on display for both days

#### POSTER COMPETITION

The finalists from the first stage of the competition will be assessed by judging panels over the conference. Prizes will be awarded for best in year for: 1st, 2nd, and 3rd+ year.

#### **PEOPLE'S CHOICE**

Delegates will have the opportunity to vote for their favourite poster. Head to our LinkTree to find the voting form by scanning the QR code below and log into Google with your email address:





	FIRST TEAR
1	Akilan Selvacoumar, Robert Stewart, Hans Wolfgang Loidl and Ryad Soobhany
2	Aleksander Bielinski
3	Hamidreza Farhadi Tolie, Jinchang Ren, Eyad Elyan and Somasundar Kannan
4	Kieran Waugh
5	Laura Larios-Jones
6	Malavika Suresh, Ikechukwu Nkisi-Orji and Nirmalie Wiratunga
7	Narinder Kaur, Fani Deligianni, Pierpaolo Pellicori and John Cleland
8	Narjes Rohani
9	Pedram Salimi, Nirmalie Wiratunga, Anjana Wijekoon and David Corsar
10	Qiyuan Wang and Christos Anagnostopoulos



### **POSTER SESSION**

Benchmarking Unikernels with Distributed Map Reduce

Enhancing the Provision of Labour Market Intelligence in Scotland Using Machine Learning

Multimodal Image Fusion and Deep Learning for Condition Monitoring in Subsea Applications

Push or Pinch? Exploring Slider Control Gestures for Touchless User Interfaces

Reordering Edges in Temporal Graphs to Maximise Reachability

Evaluating Explanations with Explanation-Driven Training

Predicting Incident Heart Failure in Patients with Type 2 Diabetes: An Artificial Intelligence approach

A data-driven approach to discovering students' learning tactics in a large-scale health informatics course

Natural Language Generation for Interactive Explainable AI

Building Model Resilience at the Network Edge

#### **POSTER SESSION** (continued)

#### SECOND YEAR

- 11 Fatima Ghanduri, Dr Christos Anagnostopoulos and Dr Fani
- 12 Fraser Garrow
- 13 Gayani Nanayakkara
- 14 Jude Haris, Perry Gibson, José Cano, Nicolas Bohm Agostini and David Kaeli
- 15 Kaixuan Wang, Alex Voss and Loraine Clarke Muhammet Alkan, Fani Deligianni, Samuel Leighton, Rajeev Krishnadas, Jonathan Cavanagh, Pavan Kumar Mallikarjun, Georgios
- 16 V. Gkoutos, Linda Everard, Swaran Singh, Nicholas Freemantle, David Fowler, Peter Jones, Vimal Sharma, Robin Murray, Til Wykes, Richard James Drake., Iain Buchan, Shôn Lewis and Max Birchwood
- **17 Nurudeen Salau and Muhammad Shakir**
- 18 Qianyu Long, Christos Anagnostopoulos and Fani Deligianni
- 19 Sarra Graja, Salma Elsayed, Lynsay Shepherd, George Lovell and Ken Scott-Brown
- 20 Tahani Aladwani, Christos Anagnostopoulos and Fani Deligianni
- 21 Xinshu Ma, Florentin Rochet and Tariq Elahi

#### **THIRD YEAR**

- Ashish Upadhyay, Stewart Massie, Ritwik Singh, Garima Gupta
- and Muneendra Ojha
- 23 Francisco Javier Chiyah-Garcia
- 24 Ipshita Roy Chowdhury and Deepayan Bhowmik
- 25 Jacob Koenig
- 26 Kelvin Lawal, Titus Olaniyi and Ryan Gibson
- 27 Liangfei Zhang
- 28 Zhibo Li

Predictive Analytics & Query Driven Maintainable Forecasting Models

On the Merits of Evolving Purely Functional Programs

Challenges of Using Clinical Language Modelling for Information Extraction to Auto-populate Electronic Health Records

Developing DNN Accelerators for Edge FPGAs with TFLite

Human-centric Machine Learning

Challenges in Developing Risk Prediction Models based on EHR

Machine Learning Enabled Multi-Radio Access Technology Selection in 5G Networks

Knowledge and Information Reuse in the Edge Computing Environments

Using Affective Computing to Create an Emotional Bond between Users and Virtual Agents for Enhanced Social Interaction

On the use of Approximate Reasoning for Data-driven Tasks Management at the Edge

Bow-Tie: Defending Against Malicious Mixes with Topological Engineering

A Case-Based Approach to Data-to-Text Generation

Situated Natural Language Interaction with Robots

Malware Recognition and Prediction based on Image Processing using Deep Learning

Weakly Supervised Surface Crack Segmentation

Fog Computing Energy Efficiency With Data Management For Smart Home Environments

Short and Long Range Relation Based Spatio-Temporal Transformer for Micro-Expression Recognition

Declarative Abstractions for Data Collections

### PHD WORKSHOP: INTELLECTUAL PROPERTY

Time: Tuesday 28<sup>th</sup> June, 15:30 – 16:45 Location: Workshop Room A426C, Govan Mbeki Building Facilitator: Graham Carter

**Coordinators:** Andrei Petrovski, Charly Harbord, Uneneibotejit Otokwala

The session is devoted to looking into the issues related to Intellectual Property (IP) Rights. The session will cover general information on IP rights but will also consider procedural aspects for how IP from your research work may be identified, protected and commercialised. The session will look at:

- the different types of IP and their purpose;
- procedures for obtaining and controlling IP rights;
- who might own the IP in your research;
- university policies and procedures for protecting and commercialising IP;

The development of skills addressed in the session fits into the following sections of the Vitae RDF:

- C1: Professional Conduct
- C2: Research Management
- C3: Finance, funding, Resources.

### PHD WORKSHOP: GETTING THE JOB YOU WANT AFTER FINISHING YOUR PHD

**Time:** Tuesday 28<sup>th</sup> June, 15:30 - 16:45 **Location:** Workshop Room A426F, Govan Mbeki Building **Facilitator: Robin Huggins Coordinators:** Jacob Koenig, Yuhao Sun

Continuing in academia or looking for a job in the industry requires an up-to-date CV as well as skills on how to succeed in interviews and applications. In this workshop we will look at 3 different aspects of further employability: Resume Construction, Interview Techniques, and Networking skills This workshop is led by Robin Huggins, Director of MBN Academy. Rob draws upon 20 years' experience as an expert Data Talent practitioner, including delivering The Data Lab's MSc. Placement Programme for the last few years, therefore having the right skillset to explain these aspects from a recruitment side.

### EDUCATION WORKSHOP: POST PANDEMIC COMUPTING SCIENCE EDUCATION

Time: Tuesday 28<sup>th</sup> June, 15:30 – 16:45 Location: Workshop Room A426, Govan Mbeki Building Facilitators: Mark Zarb, Balandin Di Donato, Khristin Fabian, Debbie Meharg, Hebatallah Shoukry, Peter Donaldson

Coordinator: Matthew Barr

The COVID-19 pandemic has forced us to rethink how we deliver our teaching and assessment. And, while the circumstances that required us to adapt our practice were far from ideal, some of the resulting innovations in our methods have had a positive impact. In this session, we'll hear from colleagues about the new approaches to delivering CS education that have emerged during the pandemic and are here to stay, even as we recover from the impact of COVID-19.

### BUILD YOUR OWN: BRICOLAGE FOR BLENDED SPACES

**Time:** Tuesday 28<sup>th</sup> June, 15:30 - 16:45 **Location:** Room will be notified on the day **Facilitators: Emilia Sobolewska, Callum Egan Coordinator:** Joanna Aldhous, Ricky Zhu

This workshop aims to advocate the benefits of methodological bricolage, where the researcher tailors tasks, tools, and approaches to understand the subject at hand. We will explore the creative process of reimagining the research frameworks, using the theory and practice of Blended Spaces. The workshop will specifically benefit those researchers, dealing with non-standard topics, where the current methodological frameworks are either insufficient or nonexistent.

### PHD WORKSHOP: EARLY CAREER RESEARCH PANEL SESSION

Time: Tuesday 28<sup>th</sup> June, 15:30 – 16:45 Location: Deeprose Lecture Theatre (A005), Govan Mbeki Building Facilitator: Mujeeb Ahmed, Anjana Wijekoon Coordinators: Tim Storer

You're somewhere along the way on the long journey to earning your PhD and graduation still seems a long way off, but now is the perfect time to start planning for what happens next. This session will look at options for PhD graduates who are intending to continue into early career research roles. A wide variety of career steps exist, including going straight into an academic role, an independent research fellowship, a research associate working on a specific project, knowledge transfer, the emerging research software engineering. In this panel session you will hear the perspectives of early career researchers who have followed these different paths and the impact it has had on their careers.



### BEST DISSERTATION AWARD

Selected from PhD dissertations awarded in the past year (2021/2022), the submissions showcase the best exemplars of graduate research across Scotland, with entries from Scottish institutions. They are reviewed by a committee of senior researchers in Computer Science and Informatics and chaired by the SICSA Graduate Academy Director.

The Best PhD Dissertation Award this year is proudly sponsored by <u>Arista</u>. A prize of **£2,000** will be awarded to the winning dissertation.

BEST PAPER AWARD

ARISTA

We would like to provide a platform for PhD students to showcase their work and get well-deserved recognition for the hard work that goes into writing and publishing papers. This competition offers students the opportunity to present their research and get feedback from industry leading experts.

The winner of the best paper competition will receive a prize of **£250 in vouchers** sponsored by <u>Arista</u>, as well as an invitation to present the paper and get feedback from a panel of industry experts within Arista.

### **CAREERS FAIR**

This year we are delighted to announce that the first day of the conference will include a PhD net Ai Careers Fair will be held on the 5<sup>th</sup> floor of the Glasgow Merchants House between 18:15 and 19:30. This is a fantastic opportunity to meet with companies in a relaxed and CR informal environment!



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### **CONFERENCE DINNER**

The first day of the conference will culminate in a reception in the historic **Merchant's House** in Glasgow's George Square. The reception will feature a civic welcome from a senior representative from Glasgow City Council followed by a welcome speech from the SICSA Director. This will be an excellent opportunity for delegates to relax and network with peers.

The reception will begin right after the Careers Fair, from **19:30** to approximatively **22:00**, at which time delegates will be able to enjoy the rest of their evening in Glasgow City Centre or travel back to the Conference accommodation. Drinks will be provided during dinner, and a cash bar will also be available.

### COMMITTEE

Stuart Anderson	University of Edinburgh	SICSA Director
Tim Storer	University of Glasgow	SICSA Deputy Director
Matthew Barr	University of Glasgow	SICSA Education Director
Andrei Petrovski	Robert Gordon University	SICSA Graduate Academy Director
Aileen Orr	University of Glasgow	SICSA Executive Officer
Anastasia Fliatoura	University of Glasgow	SICSA Executive Assistant
Tiffany Babey	University of Glasgow	SICSA Events Coordinator
Jacob Koenig	Glasgow Caledonian University	Conference Academic Chair
Michael Crabb	University of Dundee	Conference Poster / Web Chair
Joanna Aldhous	Edinburgh Napier University	PhD Organising Committee
Ricky Zhu	University of Edinburgh	PhD Organising Committee
Charly Harbord	Abertay University	PhD Organising Committee
Uneneibotejit Otokwala	Robert Gordon University	PhD Organising Committee
Iulia Paun	University of Glasgow	PhD Organising Committee
Yuhao Sun	University of Edinburgh	PhD Organising Committee
Syed Yaseen Shah	Glasgow Caledonian University	PhD Organising Committee

Each year's SICSA conference is organized by a committee of volunteers drawn from across the Scottish Universities, they will be identifiable by the SICSA T-shirts during the conference.

Welcome to the 13<sup>th</sup> Annual SICSA PhD Conference at Glasgow Caledonian University. This is the first in-person conference since 2019 so please make the most of the opportunity to network, establish new connections and meet those people you know only from Zoom calls! This year's conference is focussed on sustainability, resilience and recovery. We are all still in recovery mode, rebuilding our work, planning careers and contributing to the development of a sustainable and resilient economy. Digitalisation of our economy and society is progressing apace and we find informatics and computer science everywhere from fundamental challenges to the development of a lively tech ecosystem. The programme has been designed to try to facilitate development and recovery for the "living with COVID" future. The organising team have put together a wideranging programme. There is lots of choice and we hope there is something for everyone in this year's programme.

Finally, I'd like to thank the organising committee and acknowledge the efforts of Aileen Orr, Anastasia Fliatoura, and Tiffany Babey for all their work in shaping and supporting the development of this year's conference. We hope you enjoy your time at the conference in Glasgow and you will have fun during the conference!

Stuart Anderson SICSA Director, 2022





### **SCHEDULE AT A GLANCE**

#### DAY 1

and a

Registration, Lunch & Posters **12:00** Welcome Talk **12:30** Keynote Talk **12:40** SICSA Education Network Launch **13:40** Plenary: Keeping Mentally Healthy **15:00** Parallel Sessions **15:30** Accommodation check-in **17:00** Careers Fair **18:15** Dinner **19:30** 

#### DAY 2

09:00 Registration, Coffee & Posters
09:30 Welcome talk
09:40 Start-Up Panel
11:30 Poster Session
12:15 Lunch
12:45 Reverse Viva
14:00 Best Paper & Posters Award
14:30 Keynote Talk
15:30 Best Dissertation Talks & Award
16:00 Event Close

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