

Biology and CARMA Showcase, Wednesday 1st June 2022 in GP212



Start	End	Speaker		Торіс		
9:40	10:00	COFFEE and TEA available + IT setup				
10:00	10:20	Dr Dan Johnstone & Dr Judy-anne Osborn		Acknowledge Country + Intro t	to Biology and CARMA	
10:20	10:25	Biology speaker 1 (Dr Lizzie Manning)		Optical recordings of single neu	aron activity to decipher neural	
10:25	10:30	Questions		control of behaviour		
10:30	10:35	CARMA speaker 1 (A/Prof Yuqing Lin)		A few data mining approaches		
10:35	10:40	Questions				
10:40	10:45	Biology speaker 2 (Dr Shafiq Syed)		Mathematical Modelling for quantitative biology		
10:45	10:50	Questions				
10:50	10:55	CARMA speaker 2 (Prof Natalie Thamwattana)		A story of interdisciplinary wor	k on mathematical modelling	
10:55	11:00	Questions		of phagocytosis (biological cell	s ingesting others).	
11:00	11:20	MORNING TEA BREAK				
11:30	11:35	Biology speaker 3 (Prof Murray Cairns)		Why we need computer science	e and mathematics in	
11:35	11:40	Questions		21 st century medical research.		
11:30	11:35	CARMA speaker 3 (Dr Robert King)		Why it's a good idea to plan data collection, and fun with R.		
11:35	11:40	Questions				
11:40	11:45	Biology speaker 4 (Dr Gerard Kaiko)		Network modelling for multi-on	mic analysis of the intestinal	
11:45	11:50	Questions		microbiome to identify theraped	utic targets.	
11:50	11:55	CARMA speaker 4 (A/Prof Jeff Hogan)		Multi-channel, multi-dimensio	nal signal/image processing &	
11:55	12:00	Questions		Phase locking and EEG		
	12:30	Breaking Barriers 1: research students, collaborations and co- supervisions	Dr William Reay	How to build capacity in statist	ics as a medical researcher to	
				achieve more impactful outcom	les	
12:00			Dylan Peek	Working on 3D structures and t	heir topology: looking for	
12.00				biological data in 3D with interesting topologies		
			A/Prof Mike Meylan	Shares thoughts and leads a short group discussion on		
12.20	12.20			TERED LUNCH	and co-supervision	
12:30	13:30	CATERED LUNCH				
13:30	14:00	computational	Dr David Allingham	Examples of computing a	at different scales at UoN	
		opportunities	All of us!	Discussing opportunities.	CLOSING REMARKS	

Biology speakers:

Name and Contact Details		Bio/Topic	
	Dr Dan Johnstone daniel.johnstone@newcastle.edu.au	Dr Dan Johnstone (<u>https://www.newcastle.edu.au/profile/daniel-johnstone</u>) is Research Project Manager in the School of Biomedical Sciences and Pharmacy at Newcastle. He is co-organising this Showcase as part of his role supporting Biologists in their research needs and interests at Newcastle University.	
	Dr Lizzie Manning Lizzie.manning@newcastle.edu.au	Dr Lizzie Manning (<u>https://www.newcastle.edu.au/profile/lizzie-manning</u>) is a neuroscience researcher. Her talk title is "Optical recordings of single neuron activity to decipher neural control of behaviour". Her work addresses calcium imaging from single cells to networks.	
	Dr Shafiq Syed shafiq.syed@newcastle.edu.au	Dr Shafiq Syed (<u>https://www.newcastle.edu.au/profile/shafiq-syed</u>) is a cancer researcher who works on Mathematical modelling for Quantitative Biology. In his work he uses "quantitative biology, cell-lineage tracing, high-throughput RNA-sequencing, proteomics, genomics, and advanced 3D-imaging".	
	Professor Murray Cairns murray.cairns@newcastle.edu.au	Professor Murray Cairns (<u>https://www.newcastle.edu.au/profile/murray-</u> <u>cairns#highlights</u>) studies omics for complex disease and precision medicine and uses high-level bioinformatics. His talk title is: "Why we need computer science and mathematics in 21 st century medical research".	
	Dr Gerard Kaiko gerard.kaiko@newcastle.edu.au	Dr Gerard Kaiko (<u>https://www.newcastle.edu.au/profile/gerard-kaiko#career</u>) uses humanised organoid models of lung and intestinal disease for drug discovery, and is interested in incorporating multi-omic network modelling. His talk title is: "Network modelling for multi-omic analysis of the intestinal microbiome to identify therapeutic targets."	
	Dr William Reay william.reay@uon.edu.au	Dr William Reay is postdoctoral researcher who recently completed his PhD (<u>https://www.newcastle.edu.au/profile/william-reay</u>). During his PhD he was very active in developing skills to support Biology such as in Statistics. His talk title is: "How to build capacity in statistics as a medical researcher to achieve more impactful outcomes"	

CARMA speakers:

	Name and Contact Details	Bio/Topic
	Dr Judy-anne Osborn	Dr Judy-anne Osborn (<u>https://www.newcastle.edu.au/profile/judy-anne-osborn</u>),
	Judy-anne.Osborn@monash.edu or	now also at Monash, directs CARMA (<u>https://carmamaths.org</u>), a Research
	judy-anne.osborn@newcastle.edu.au	Group in "Computer Assisted Research Mathematics" which began at UoN and
		now spans several Universities here and overseas, with a strong Newcastle base.

	Associate Professor Yuqing Lin	Associate Professor Yuqing Lin (https://www.newcastle.edu.au/profile/yuqing-
1939	yuqing.lin@newcastle.edu.au	lin#contact) is a Mathematician and Software Engineer. He will give a brief
		overview of some data mining approaches he has come across in a few projects.
		These include CNN+LSTM Deeping Learning Neural Network for Fake News
		Detection, mCNN+sBiGRU for source code plagiarism detection and subgraph
		isomorphism detection in machine health diagnosis.
	Professor Natalie Thamwattana	Professor Natalie Thamwattana
	natalie.thamwattana@newcastle.edu.au	(https://www.newcastle.edu.au/profile/natalie-thamwattana) is an applied
		mathematician with diverse collaborative research experience. She will talk
		about her interdisciplinary work on phagocytosis.
	Dr Robert King	Dr Robert King is a Statistician and Data Scientist based in the Newcastle region.
A THE ARE	robert.king.consulting@gmail.com	He has worked collaboratively with academics from many disciplines and has
		strong connections to the University of Newcastle. His talk title is: "Why it's a
A CAR		good idea to plan data collection, and fun with R."
and the second	Associate Professor Jeff Hogan	Associate Professor Jeff Hogan (<u>https://www.newcastle.edu.au/profile/jeff-</u>
bash	jeff.hogan@newcastle.edu.au	hogan) works in harmonic analysis, an area of maths which underpins the topics
		in his talk which span:
		1. Multi-channel, multi-dimensional signal/image processing, and
		Bandpass signal processing with applications to EEG.
	Mr Dylan Peek	Dylan Peek is a PhD student working in CARMA's research group
et of	<u>dylan.peek@uon.edu.au</u>	(https://www.newcastle.edu.au/research/centre/interdisciplinary-machine-
N 20		<u>learning</u>). He is studying 3D structures and their topology, and is interested in
- wi= C		finding biological data in 3D with interesting topologies.
	Associate Professor Mike Meylan	Associate Professor Mike Meylan (<u>https://www.newcastle.edu.au/profile/mike-</u>
	https://www.newcastle.edu.au/profile/mike-	meylan) is an applied mathematician who enjoys working with others. His
	<u>meylan</u>	collaborative work across Science, Technology and Engineering spans topics
		such as water waves, coal, aerospace. He will share stories of co-supervision and
		help us discuss supporting PhD students/collaborations.
0	Dr David Allingham	Dr David Allingham (<u>https://www.newcastle.edu.au/profile/david-allingham</u>) is a
	david.allingham@newcastle.edu.au	mathematician and software specialist whose multidisciplinary work and roles
100		span visualisation, research and technical support. He will present examples of
		research computing at different levels of computational demand at the University
A Destroy		of Newcastle; and describe how the relevant tools are accessed/came about.