

# Regular Expression

Summer Term  
2018/19

Department of Computer Science  
University of Warwick

It's been a while since our last newsletter, so we have a bumper edition celebrating the achievements and milestones of the Department and our people. If you have any news or events that you'd like to share in future Regular Expression newsletters, you can contact [DCS.comms@warwick.ac.uk](mailto:DCS.comms@warwick.ac.uk) or complete our submission form here;

<https://warwick.ac.uk/fac/sci/dcs/intranet/staff/communication/newseventsubmission>

## A warm welcome to those who have joined us in 2018/19...

**YULAN HE** - Professor  
**FENG HAO** – Professor  
**TANAYA GUHA** – Assistant Professor  
**JAMES ARCHBOLD** – Senior Teaching Fellow  
**TOM GUR** – Assistant Professor  
**CHARILAOS EFTHYMIU** – Assistant Professor  
**ADITYA GAUR** – Research Fellow  
**LIN GUI** – Marie Curie Research Fellow  
**PETER DAVIES** – Research Assistant  
**DOMINIK KEMPA** – Research Fellow  
**PAVEL VESELY** – Research Fellow  
**SAMIRAN BAG** – Research Fellow  
**MUHAMMAD AZAD** – Honorary Research Fellow  
**JOSIAH LUTTON** – Research Fellow  
**MICHAEL SHEKELYAN** – Research Fellow  
**SAM MATTHEWS** - Research Finance Coordinator  
**MARIA OVENS** – Head of Administration  
**ADAM ALCOCK** – Comms and Events Administrator



On Wednesday 3<sup>rd</sup> April we said goodbye to Gill Reeves-Brown who retired after many years in DCS and before that in French. The day was marked with cake, fizz and pastries and celebrations carried on into the evening in true student fashion at the Dirty Duck. Gill was a huge part of the professional services team and her expertise and presence around the Department will be sorely missed. Happy retirement Gill!

## But it's goodbye to...

Alexandra Cristea  
Steve Wright  
Ruth Cooper  
Lynn McLean  
Matt Jacks  
Jonathan Noel  
Andrzej Grzesik  
Peter Pal Pach  
Christian Konrad  
Mike Cribdon

## Congratulations to...

Adam Chester and his wife Louise on the birth of their son William Henry Chester. Born Friday 12 April weighing 7lb and 15oz.

## Happy retirement to...

Graham Martin  
Gill Reeves-Brown

### MSB Opens for Business!

The new Mathematical Science Building is now complete; the project won £2 million in funding from the Wolfson Foundation. The new facility will support Mathematics, Statistics and Computer Sciences departments in their work which has a profound impact on society, communities and cities.

At 6 stories high, this building provides the spaces that the mathematical sciences departments need for their research, teaching, collaboration and day-to-day work for years to come. As well as offering an enhanced student experience and a boost to the already excellent international standing of these departments, it will house staff who work on interdisciplinary initiatives like the Alan Turing Institute. Warwick is a founding member of the Turing - the national institute for data science and artificial intelligence.

*"As the structure of the Mathematical Sciences building neared completion, we were asked to mark a steel girder with a symbol to represent the Department.*

*The picture Mike chose is a "gadget" which he designed back in 1976. However you colour the vertices of this little graph using three colours, always ensuring that the colours at the ends of each edge differ, the "north" and "south" vertices will always have the same colour and similarly for the "west" and "east" vertices. This was used to show that the 3-colouring problem for planar graphs is NP-complete" – Professor Mike Paterson*

**Here's what our staff and students think of the move...**

"A large number of PhD students, mostly in the Warwick Institute for the Science of Cities (WISC), are housed on the fourth floor of the MSB. We're split across three areas: an open-plan area with the new students; large offices with upper-years groups; and a larger open-plan office for students midway through their PhDs. The open areas manage to strike a great balance between the collaborative nature of open-plan offices, and the quiet thinking space that researchers need. We've recently acquired some new whiteboards which make collaborative work easier still. The atmosphere in the new building is great. We have a large kitchen, with places to sit and take five minutes away from work and to have a chat with your fellow researchers. There's a feeling of warmth and friendliness between everybody in the department. The natural light from the huge glass windows just seems to make people happy. With close access to all the important people - and DCS only a few paces away - what's not to love?" – Alex Dixon, 2<sup>nd</sup> year PhD student.



*"It's been a great move over to MSB. We now have a dedicated space for our MSc students which has added value to their experience of being with us. The office and facilities are excellent which really contributes to DCS being a great place to study and to work. I really like that there's lots of study and social spaces, which the students seem to love and provides us with so much more room. The spaces work well for events too – such as open days and graduation!" – Sharon Hayes, Programmes Coordinator*





Professor Nasir Rajpoot will be co-directing the recently awarded £15m PathLAKE centre of excellence at the UHCW NHS Trust in Coventry. The aim is to establish a national centre of excellence for the use of artificial intelligence (AI) in pathology. This comprises the nation's leading digital and computational innovators from NHS, academia and industry, in order to drive AI innovation in the UK and ensure that the UK is in prime position to leverage the full value of NHS pathology data to drive economic growth in AI for healthcare.

Professor Rajpoot will be leading the computational arm of the PathLAKE centre. The centre will establish a multi-site pathology image data lake richly resourced in annotations and clinico-pathological meta-data, aimed at supporting the growth of this sector and job creation to ensure UK leadership in pathology AI.

The centre will work closely with academia, industry and NHS to develop AI tools for two high-impact exemplar projects that reflect the demand that pathology has today for automation and algorithm-driven precision, aimed at massively improving efficiency of pathology reporting and selection of patients for personalised medicine.

<https://warwick.ac.uk/fac/sci/dcs/news/?newsItem=8a1785d86736b148016737768cd714c5>



*"The University of Warwick has been working with Rolls-Royce for the past ten years, investigating ways in which high performance computing can boost the productivity of aircraft engine design and engineering."*

*"We are delighted to be working with such a strong team of university and industry partners to deliver next generation engineering simulation and modelling capabilities."*

*– Professor Stephen Jarvis*

Scientists at the University of Warwick's Department of Computer Science are to benefit from an initiative that seeks to build links between industry and researchers, as part of a project with Rolls-Royce to create a detailed simulation of a gas-turbine engine in operation.

The research aims to lead to the virtual certification of gas turbine engines, with the researchers also seeking to develop the next generation of engineering simulation and modelling techniques during their project. Their challenge combines fundamental engineering and computational science research and will tackle a level of detail never before attempted in such a simulation.

The project, carried out over five years, involving the universities of Warwick, Bristol, Cambridge and Oxford and led by Edinburgh and is one of seven across the UK to benefit from a £42 million programme that aims to build links between the UK's research base and industry partners.

This is one of two projects the University of Warwick has been granted money for by the Engineering and Physical Sciences Research Council (EPSRC) Prosperity Partnership, as WMG at the University of Warwick was also granted £7m for development of Rapid Alloy Prototyping.

Professor Philip Nelson, EPSRC's Executive Chair said:

"Our first round of Prosperity Partnerships are proving a great success. They are bringing universities and industry together and applying the creative energies of both to engineering and scientific challenges. We are confident that these projects will deliver real benefits to all their partners and help the UK research, discover and innovate."

Last year saw the introduction of the Warwick Welcome Week – a 9 day programme of events and activities to enable our last cohort to settle into life at Warwick. Sessions were designed to orientate students around campus and adjust to a new environment, as well as getting them used to their departments and get them set for day 1. We received some great feedback from our efforts last year and we'll be pushing initiatives forward for planning for welcome week in September. Here, *Vanshika Saxena* a first year on our Computer Science MEng degree tells us about her experiences.....

## Welcome Week at Warwick

This was the week before I started going to lectures; it was the perfect opportunity to get settled in and find out what university life has to offer!

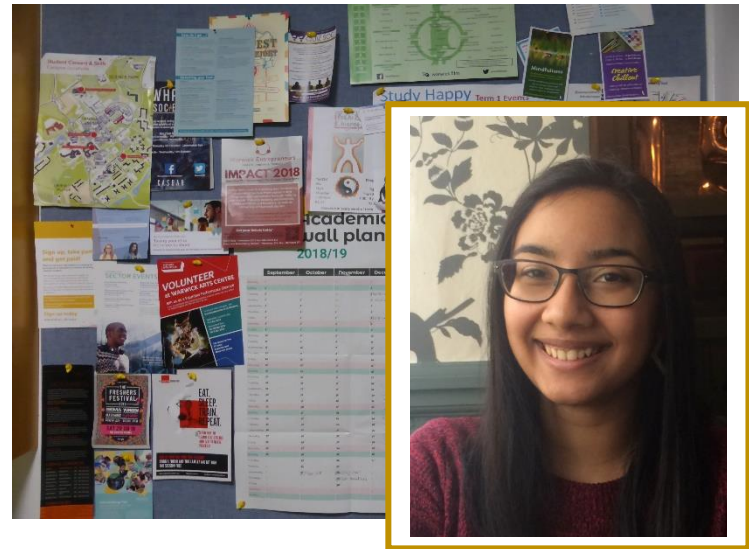
Welcome week was a blur, and one of the most exciting, action-packed weeks of the year. With over 250 societies and many sports clubs offering taster sessions, I found myself spoilt for choice and ended up signing up to more activities than I could possibly attend! I even had the chance to watch a stand-up comedy show and a free movie. And there were so many freebies and free food... it was beautiful.

Before our lectures got into full swing, the DCS induction events were really useful for getting settled into the department.

It was inspiring to hear DCS staff talk about their research. For me personally, learning about an application of Computer Science in healthcare (cancer diagnosis) was particularly energising; it was a reminder of why I have chosen my degree – great for motivation!

The lab session on functional programming was challenging, but all that really needs to be said is that it involved kittens. Genuinely, it's these little things that really instil comfort and optimism into a fresh-eyed fresher.

The most valuable activities were those which involved meeting and talking to people – this is where I started to develop a sense of belonging. I particularly like the concept of 'cousins' and found that talking to students in senior years was very helpful. Instead of a one-off thing, it would be nice to see this concept taken further. I believe that having a sustained support structure that encourages the sharing of experiences between students of different years would be most beneficial. And thus, university life begins...



*"The first ever Warwick Welcome Week was a great success for Computer Science (and we've been mentioned in dispatches as a good example of how it should be done). Thanks to the hard work of all staff involved and the enthusiasm of our student helpers our new first years had a great introduction to the department. We've had lots of positive comments from the incoming students and it's clear that Welcome Week helped them find their feet and get a flying start with their studies. In fact, many of them can't believe the university had never done this before! It was fantastic to see so many eager new faces and to start getting to know the new arrivals in a relaxed setting before term started. We're now starting to plan for Welcome Week 2019. There will be a few changes but we look forward to another action-packed week with the new cohort."*



– Dr Jane Sinclair

## We're Looking for Cousins....

If any of your personal tutees are interested in becoming a 'cousin' to help welcome and mentor the next cohort then please ask them to e-mail [DCS.Comms@warwick.ac.uk](mailto:DCS.Comms@warwick.ac.uk) to express their interest. Activities are shaping up for Welcome Week 2019 already and we're looking to recruit suitable cousins to get involved and help orientate our new students.

## Welcome!

Tanaya Guha is in the spotlight for this issue's new starter interview. Find out more about Tanaya below...

**Q: What's your position in the Department and can you tell us a bit about your professional background?** I joined the department as an Assistant Professor in August 2018. Before I joined Warwick, my academic journey spanned three countries - India, Canada and US. I received my PhD in Electrical and Computer Engineering from the University of British Columbia (UBC), Vancouver, Canada. After that I worked in University of Southern California (USC), Los Angeles as a research fellow, and then in Indian Institute of Technology (IIT), Kanpur, India as an Assistant Professor. My current research is focused on building computational models to understand, analyse and predict human emotion and behaviour from heterogenous multimodal data.



**Q: Which specific area(s) of Computer Science will you be teaching here?** I teach a third year module on digital forensics. This involves studying various computational techniques that are used to collect probative facts from digital data often in relation to cyberphysical crime. I focused on a subfield of digital forensics that involves analysing image and video data for forensic purposes. This area is getting increasingly important since digital cameras and sophisticated photo editing softwares have become commonplace. This module teaches how to use computational techniques to identify photo forgery, detect image sources and collect crime-related evidences from images and videos.

**Q: What have been your most significant accomplishments?** This is a difficult question. I have never seriously thought about it. In general, I consider myself successful when my students accomplish something.

**Q: If you could book a guest speaker for a CS lecture, who would you choose?** I would like to invite Jeff Dean, who currently leads Google AI. He has been instrumental in the development of many Google products that have changed our lives.

**Q: What do you like doing when you are not teaching/doing research?** Mostly catching up on sleep!

**Q: Who has influenced you the most?** A number of people have influenced me and my life at different points. These people include teachers, friends, family members and even strangers (in no particular order).

**Q: What do you most like about the department?** Since the first day of my visit to the department, I have found that our department staffs (both academic and admin) are very friendly and helpful. To be able to ask for help when you need creates a very supportive environment, which I appreciate a lot.

**Q: Do you feel you've settled into the area?** Yes, almost. I live in a beautiful neighbourhood, and I am very fond of the campus.

## Staff Recruitment

This month we also welcome Dr Arpan Mukhopadhyay to the department as an Assistant Professor. Recruitment continues for the next academic year with upcoming vacancies for Senior Teaching Fellows and Teaching Fellows to support teaching for next year. Details on new academic colleagues are published to our social media feeds.

Recent professional service recruitment include Louise, who replaces Gill Reeves-Brown and will start in the department on 28<sup>th</sup> May. A replacement for Mike Cribdon will be recruited in due course.

## Warwick Welcomes Donors to MSB

Professor Stuart Croft, the Vice Chancellor and representatives from Computer Science, Mathematics and Statistics at Warwick hosted donors who supported the university's newly completed Mathematical Sciences Building at the end of March.

Among the guests was Paul Ramsbottom, Chief Executive of The Wolfson Foundation, which made a grant of £2 million towards the project.

Guests enjoyed a tour of the new space, meeting a number of top researchers along the way. With diverse research themes including Data Science, Epidemiology and Smarter Cities, the academics and students were on hand to talk about how Computer Science, Statistics and Mathematics all feature heavily in searching for solutions to the world's big questions.

As well as a chance to see the building and meet the inhabitants, donors were also able to see their names on a new 'Donor Wall' at the main entrance to the building. A total of £2,550,000 was raised in philanthropic income by the generous supporters for the new building and the research that takes place within.



## Warwick Postgraduate Colloquium in Computer Science



The Warwick Postgraduate Colloquium in Computer Science, WPCCS 2018, took place on Friday 29th June. The colloquium, an annual student-run event, showcased research performed by the postgraduate research (PGR) students in Computer Science, the Centre for Discrete Mathematics and its Applications (DIMAP) and the CDT in Urban Science and Progress. The event was held in The Oculus, at University of Warwick and showcased over 45 presentations and 25 posters of the latest research in the Department of Computer Science.

In addition to presentations from students in each of the department's research areas, staff and external speakers offered guest talks. These centred on language design patterns in 2018, the evolution and horizons of Field Programmable Gate Arrays (FPGAs), and WebEXR, an online high dynamic range image viewer.

Florin Ciucu, the Director of Postgraduate Research, said of the event:

"WPCCS is an excellent opportunity for our students to widely expose where they currently stand in their research. It's a fantastic way for them to contribute by sharing their research experiences, ideas and visions with their peers and the wider research community."

## Data Science for Social Good (DSSG) Internship

The highly regarded [DSSG programme](#) was established by the University of Chicago in 2013 and, in the summer of 2019, it will be available in the UK for the first time.

The Alan Turing Institute is championing a collaboration with the University of Chicago which establishes the Warwick Business School, the University of Warwick's Department of Computer Science and its Mathematical Institute as the foundational partners for a UK-wide programme in subsequent years. The DSSG helps non-profits and government organisations to do more with their data - improving their services, interventions and outreach so that they can fulfil their mission of bettering the world and people's lives.

Since DSSG began, over 200 graduate and undergraduate students studying computer science, social sciences, statistics, public policy, and other quantitative fields have spent their summers working with non-profit and government partners around the world to deliver real world change, in over 60 projects. These include critical challenges such as workplace safety, early diabetes screening, repeated police custody/imprisonment, traffic fatalities and injuries, student dropout rates, and tenant harassment.

### Wellcome Trust – Joint Investigator Award in Science



Dr Sascha Ott (Computer Science) and Prof. Jan Brosens (Warwick Medical School) have been granted a Wellcome Trust Joint Investigator Award in Science providing £1.2 million to fund a five-year project investigating the causes of recurrent pregnancy loss and other reproductive disorders. The focus of this project is to disentangle the complexity of the endometrium, the tissue lining the uterus. The endometrium undergoes significant changes from day to day during the menstrual cycle, is naturally variable between menstrual cycles and between individuals, and consists of a number of interacting cell types undergoing specific temporal transitions. This variability and complexity has so far precluded the identification of the cause of recurrent pregnancy loss.

Professor Brosens and Dr Ott are going to employ cutting-edge single-cell technology to identify the make-up of endometrial tissue samples at each day of the luteal phase of the menstrual cycle, determine cell types, cell states, variability of expression of each gene in each cell type, and create a reference map describing the normal endometrial variation in unprecedented detail. Data from endometrial samples of patients suffering recurrent pregnancy loss will then be compared with the reference map in order to identify abnormal variation.



## British Science Festival heads to Coventry and Warwickshire

The British Science Association and University of Warwick are pleased to announce that the British Science Festival in 2019 will take place in Coventry and Warwickshire, from 10–13 September. Working in partnership with the University of Warwick, one of the UK's leading research universities, the British Science Association will bring the four-day event to the region for the first time in its 188-year history. The British Science Festival is one of Europe's longest-established science festivals, which each year travels to a new part of the UK, bringing a vast array of events, performances and installations with a scientific twist.

Joining forces with the University of Warwick and other organisations across Coventry and beyond, the British Science Festival will shine a light on the cutting-edge innovation taking place in the region.

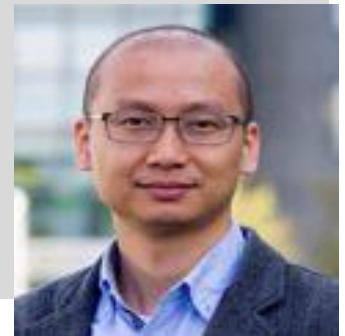
## Congratulations to....



### Sara Kalvala and Ligang He on their promotions to Reader, with effect from 1<sup>st</sup> June

*"Dr Sara Kalvala is one of the most experienced academics in Computer Science, with extensive contributions to teaching (at all levels), research (in core computer science, interdisciplinary and recently in computer science education) and administration (in departmental, institutional and national settings). Sara has also been leading a range of outreach activities, as well as being one of the most collegiate members of the department"*

*"Dr Ligang He has in recent years grown not only into one of the leaders of his wider research area in the department (high-performance systems), but also into a highly competent teaching innovator, with exemplary impact, outreach and engagement at the international level, as well as a reliable, industrious and forwards pushing colleague in the department. Among his other achievements is that Ligang has been successfully supervising a growing group of PhD students; he has graduated 5, and is currently supervising 7 PhDs"*



## Admissions and Recruitment News

We've seen an increase in demand for places on both our undergraduate and postgraduate taught courses, with no sign of the demand slowing down. With this in mind, our entry requirements were reviewed last year and most of our UG courses now have an entry requirement of A\*AA (or equivalent). Applications for all UG courses are now closed and we've welcomed 268 offer holders onto campus and into DCS over the spring term. We look forward to welcoming many of these into the Department for Welcome Week in September.

Similarly, entry requirements for our MSc courses were increased to a minimum of a 2:1 (or equivalent).

Our WP activities continue this year and into the Summer with the return of the Warwick Sutton Scholars scheme. Aimed at year 8 and 9 students from underrepresented backgrounds in the West Midlands, the scheme is designed to challenge participants and inspire them to apply to university in the future.

<https://warwick.ac.uk/study/outreach/whatweoffer/summer-schools>

**Don't forget.... You can submit your news or events using the link below....**

<https://warwick.ac.uk/fac/sci/dcs/intranet/staff/communication/newseventsubmission>

## Open Day News

Thanks for all those involved in our Offer Holder Days... in addition to the huge success of these dates, we're now looking forward to the University-wide open days on Friday 21<sup>st</sup> and Saturday 22<sup>nd</sup> June. We'll be holding our usual mix of talks, demonstrations and drop in's to showcase DCS and all we have to offer. Applicant feedback show that open days are the single most important aspect when choosing a university, so we'll be working hard to ensure the day is a huge success! Details on how to get involved will be shared soon.

