Ring

The

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Who's Who

Sam Aaron (RA), founder of Sonic Pi, will be performing with Sonic Pi in Convo 2019 at the Royal Albert Hall next year.

Convo is an ambitious new work by emerging composer Charlotte Harding , commissioned by the Tri–borough Music Hub, the Royal Albert Hall and the Royal College of Music.

Abhishek Chander (CHU BA15) is working for Amazon as a software development engineer.

Jonathan Davies (CHU MA03 PhD08) is now working at Nutanix.

Robin Harrison (R MA03) has joined Asto UK where he is head of engineering.

Richard Jebb (DAR Dip88) is CTO at Hyde Park Solutions Ltd.

William Jones (ED MPhil15) is a Wellcome Trut Cambridge PhD student in Mathematical Genomics and Medicine. He is also CTO at Heterogeneous, a genetic data sharing start–up based in Cambridge, UK.

Ban–Ruo Andy Li (T BA10) has recenly joined LMR Parters as a developer.

Dr Phebe Mann (HH BA01) has been named among the Top 50 Women in Engineering (WE50).

The list, revealed a day after International Women in Engineering Day on June 23rd 2018, is part of a campaign to raise awareness of the skills shortage facing the engineering industry and the huge discrepancy between the number of men and women currently working in engineering.

Dr Mann, one of more than 20 women with roles related to construction, is the first and only woman to hold six professional qualifications concurrently in the UK.

Dr Phebe Mann

As well as being a qualified construction and engineering lawyer, Dr Mann holds the titles of: chartered civil engineer (CEng MICE), chartered surveyor (FRICS), chartered construction manager (MCIOB), European engineer (Eur Ing), fellow of the Chartered Institute of Arbitrators (FCIArb), fellow of the Royal Society of Art (FRSA), and fellow of the Higher Education Academy (FHEA).

She is also the first female chair of the Chartered Institute of Building (CIOB) in Leicester and chairs Institution of Civil Engineers (ICE) knowledge lectures at One George Street in London, is a STEM ambassador, Talent2030 Hero and a Queen's Young Leaders mentor.

David Piggott (F BA11) is Technical Team Lead at Disney Streaming Services.

Anna Powell–Smith (ED MPhil03) is Chief Product Officer at Flourish.

Neil Satra (PEM BA14) is working for Google in Mountain View, California.

Glen Slade (JN MA87) has started Zyzzle Ltd, a technology research, development and licensing company. Its first patent filings relate to artificial intelligence (AI) systems and AI–optimised animal rearing systems.

Nicko van Someren (T MA89 PhD94) is Chief Security Officer at nanopay in Colorado, US.

Clémentine Vignault Rao (MPhil09) is CEO of Slate2Learn. Slate2Learn provides Indian primary school children with access to a tablet–based intelligent tutoring system for under \$.15 an hour, based on small learning hubs equipped with a micro–server and 10 to 40 Android tablets.

Rahul Vohra (CHR BA05) is CEO of Superhuman Lab Inc, a company he started to reinvent the email experience with a focus on speed. Unlike most browser–based email, which is server–based, Superhuman can store and index gigabytes of email in the web browser itself.

Matt Wiseman (T MA97) recently joined Uber, in the San Francisco Bay Area, as a senior product manager.

Feng Zhou (G MPhil04) is Head of Digital at ShineWing in Beijing.

Hall of fame news

Bango

Bango has expanded the use of its billing integration technology, enabling customers to sign–up for Amazon Prime Video in the UK through a leading mobile operator.

Using Bango's billing integration technology qualifying customers have the opportunity to subscribe to Prime Video as part of the customer's mobile plan.

This follows Bango's initial launch with Amazon in India for Bharti Airtel, India's largest mobile network operator.

Bromium

Bromium, the pioneer and leader in virtualisation–based endpoint security that stops advanced malware attacks via application isolation, has announced the release of Bromium Secure Platform 4.1.

The release will provide out–of–the–box use case support to address key organisational pain points, including email attachment protection; spear phishing protection and malicious download protection. The latest version also supports native Chrome browsing. Further use cases are also planned for release later in the year.

Bromium is targeting the new solution at mid–size organisations and larger enterprises.

DroneDeploy

DroneDeploy has raised $25 million in series C round funding, led by the Invenergy Future Fund, with participation from Scale Venture Partners, Uncork Capital, Emergence Capital, AngelPad, and AirTree, one of the largest venture capital firms in Australia.

The Series C funding round brings the total amount of equity investment raised by DroneDeploy to over $56 million.

DroneDeploy is the largest cloud–based drone data platform with a community of 30,000 users who have mapped more than 30 million acres worldwide.

Equisys

Equisys has been awarded an IT Europa Award for its Zetadocs Expenses solution for corporate travel and expense management.

The Connected/Mobility Application Solution of the Year category focused on the most innovative communications, IOT, m2m or mobility software solution across any industry sector.

FanDuel

Private equity backers of FanDuel, Shamrock Capital Advisers and Kohlberg Kravis Roberts (KKR) look like ensuring that none of the company's founders or employees will be able to share in the proceeds of its impending sale to FTSE 100 bookmaker Paddy Power Betfair (PPB).

Shamrock Capital Advisers and KKR have exercised 'drag–along' rights to force FanDuel's minority shareholders to agree to sell the company to PPB. According to documents outlining the terms of the deal, FanDuel is valued at 'approximately $465million'. They stated that 'As this consideration is not sufficient to satisfy the aggregate preference payable on the A preference shares, no part of the consideration payable in the offer will be payable on FanDuel's ordinary shares or options to purchase FanDuel's ordinary shares'.

Global Inkjet Systems

Global Inkjet Systems (GIS) has been presented with its second Queen's Award for Enterprise.

The company, a leading technology provider to OEMs and system builders in the inkjet industry, received the Queen's Award for Enterprise 2018 for International Trade, in recognition of its outstanding growth in overseas markets from 2015 to 2017. GIS received its first Queen's Award for Enterprise for International Trade in 2013.

Grapeshot

Grapeshot has been acquired by Oracle for a reported $325 million.

Grapeshot is a provider of brand safety and pre–bid contextual solutions to over 5,000 of the world's leading marketers. Every month, over 38 billion programmatic ad impressions are enhanced using Grapeshot's Contextual Intelligence Platform in dozens of languages.

Improbable

Improbable has announced an exploratory technology partnership with Darewise Entertainment that will see Darewise explore the application of Improbable's SpatialOS game development platform in their future game development

SpatialOS lets developers exceed the limits of a single server or game engine. It allows for a swarm of hundreds of game engines, running in the cloud, to cooperate together to simulate a world much larger, richer, and with more players than any single engine or server could.

SpatialOS is currently in a free open beta for game developers — any developer interested

in exploring how they can use SpatialOS to create new realities can download the SDK at https://improbable.io/games.

Jagex

Jagex CEO Phil Mansell revealed that the Fantasy MMO RuneScape has generated over US$800 million in lifetime revenue during its 17 years of being online.

It's assumed the revenue accounts for all iterations of RuneScape including RuneScape Classic the original variant published in 2001 (which was shut down in August), Modern RuneScape, and Old School RuneScape.

RuneScape is set to make the transition to mobile devices with Jagex launching an open beta period for Old School RuneScape on Android in July 2018. The beta is available to RuneScape Members (accounts with paid subscriptions).

An iOS version of the game is in development.

Linguamatics

Bio–IT World awarded Linguamatics the Best of Show Judges' Prize for Linguamatics iScite 2.0, a software–as–service AI scientific search application that puts the power of text analytics directly into the hands of researchers and clinicians. iScite was one of 46 products considered for the award at the Bio–IT World Conference & Expo in Boston, USA in May 2018.

Masabi

Masabi and National Express West Midlands have been recognised with a Transport Ticketing Global 2018 Awards.

The award for 'Most innovative customer serving operator' was decided by a panel of distinguished transport and payments experts.

National Express West Midlands operates in areas with high levels of deprivation and with large student populations. In a recent survey conducted in the area, 70% of students said they would not be able to afford to attend college if they were not able to access a discounted student fare.

National Express partnered with Masabi to connect their existing web portal to their new mobile ticketing app (powered by Masabi Justride) for entitlement fulfilment via an API interface (External Orders API). This allows students to order their student passes online and get them sent directly to their mobile ticketing app for activation and use. This was not only more environmentally friendly, but also saved college's admin costs and was more convenient for students as it gave them flexible passes sent straight to their phone in a format they desired.

PetaGene

PetaGene has been awarded 'Best of Show' in the Storage Infrastructure & Hardware category at the 2018 Bio–IT World Conference & Expo. This is the second time PetaGene has won the award, the first being in 2016.

PetaGene won for the Cloud Edition (CE) of its PetaSuite genome data compression product.

RealVNC

RealVNC has announced that their VNC Automotive division has been launched as an independent company through a management buyout agreement. The division will begin operating as VNC Automotive Ltd.

Over the last decade, the VNC Automotive division developed a global reputation for delivering car connectivity solutions across the automotive industry, with 15 OEMs and software installed in more than 20 million cars. To facilitate the on–going growth of this successful division, the RealVNC executive team negotiated a private management buyout, and will assist the new business through a six–month operational transition to ensure a smooth migration to full independence.

Tractable

An SEC filing indicates that Tractable has closed US$25 million in Series B funding.

The filing shows that Lonne Jaffe, managing director of Insight Venture Partners, has been added to the company's board of directors, leading some to conclude that Insight led this round of funding.

what3words

2016 Formula One champion Nico Rosberg and US venture capital firm SAIC Capital have invested in what3words.

Alpine Electronics Inc also participated in the latest round, alongside existing investor Daimler, who built the technology into their latest A–Class vehicles with plans for a wider roll out. Existing investor Intel Capital also took part.

what3words has developed a global address system which replaces longitude and latitude measures with a three–word code, breaking the world map down into 57 trillion squares of 3 metres by 3 metres.

The latest funding, which is of an undisclosed amount, will fuel expansion into new markets, and enable what3words to continue developing products.

Job listing

August 2018

Imperial College London
- *Research software engineer*

University of Cambridge Department of Computer Science and Technology
- *Research Associate in Accountable Systems*

July 2018

Cambridge Machines
- *Programmer*

Lucidworks
- *Front–end developer*
- *Full–stack engineer*

June 2018

Symplectic
- *Software developer*
- *Senior developer*

Medidata Exchange Limited
- *Django web developer/Software engineer*

If you have a job advert that you would like included in the weekly listing, please send the details (as a word doc) to cam–ring@cst.cam.ac.uk

Research Skills course

Ioana Bica: Captioning speech in real time

Scribe is an innovative end–to–end system that converts speech to text in real time with less than 4 s latency. The system is offered on both mobile platforms and laptops and is aimed towards helping deaf and hard of hearing people (DHH) with the following tasks: matching the pace of spoken presentations with their accompanying visual aids, interacting with peers in conversations or following lectures.

Current approaches for captioning speech involve using either Automated Speech Recognition (ASR) systems or trained captions. However, both options have severe disadvantages: ASR systems require high quality audio equipment and considerable computing power and have a high error rate when not being trained on the speaker or when captioning a dialogue. Conversely, professional stenographers require a lot of training to be able to keep up with human speaking rates and, consequently, are neither cost–effective to employ nor easily available.

By leveraging amateur captionists who do not require special training to provide captions and multiple–sequence alignment (MSA) algorithms, Scribe overcomes the problems mentioned above and provides a reliable and readily available tool for the DHH community. In particular, Scribe is built as an end–to–end system that utilizes, on–demand, non–expert workers which are assisted by the software through a user interface. Although the interface encourages workers to caption as much as possible in real time, they do not need to capture the entire speech. Instead, each worker is assigned different, but overlapping parts of the audio stream by the software, which are then slowed down to help them achieve higher accuracy. Moreover, for captioning dialogue, Scribe implements automated speaker segmentation techniques that are robust to external noise.

The partial captions created by each worker are combined through MSA, thus obtaining a single output stream. In order to achieve both speed and accuracy, Scribe implements a novel form of Weighted A* search that firstly splits long sequences into smaller chunks and then ensures that multiple workers agree on the correctness of overlapping chunks.

The system's performance was measured on captioning lectures from MIT

OpenCourseWare that consist of both professors explaining visual content and students asking questions. The results show that Scribe has lower latency but higher error rate than using professional stenographers. Nevertheless, by paying each amateur worker proportionally to the number of correct words typed into the system, Scribe is more cost–effective and more easily available. Additionally, Scribe represents a significant improvement in accuracy over ASR systems.

Scribe has also used to show that having captions available can help DHH students comprehend lecture materials better which represents an incentive for continuing to improve such systems. Moreover, Scribe could potentially be used to obtain training data and consequently improve ASR systems.

The best essays from the Research Skills module of the MPhil in Advanced Computer Science course 2017/2018 are being published in 'The Ring'. This is the third of these essays.

Computer Laboratory news

Centre for Mobile, Wearable Systems and Augmented Intelligence

September 11th 2018 sees the official launch of the Centre for Mobile, Wearable Systems and Augmented Intelligence, a collaboration between the University and Nokia Bell Labs.

The Centre, based at the Department of Computer Science and Technology, will be directed by the Cecilia Mascolo, Professor of Mobile Systems, and Dr Alastair Beresford, Reader in Computer Security.

Professor Cecilia Mascolo, Director of the Centre for Mobile, Wearable Systems and Augmented Intelligence

The Computer Laboratory will also host the first UK Mobile Wearable and Ubiquitous Systems Research Symposium on September 12-13th.

Mobile, wearable and ubiquitous systems have a pivotal role in today's society and daily life. Research and innovation in these domains has the potential to unlock important new applications and open the door to a better understanding of their use.

The aim of this first symposium is to establish a venue for discussion and presentation of research within the UK mobile, wearable and ubiquitous systems community.

DeepMind Chair of Machine Learning to be appointed

The Department of Computer Science and Technology is to appoint a DeepMind Chair of Machine Learning thanks to a benefaction from the world-leading AI company.

The first DeepMind Chair is expected to take up their position in October 2019.

Computer Lab graduate Dr Demis Hassabis co–founded DeepMind Technologies to bring together cutting edge machine learning and systems neuroscience in order to create artificial agents with general intelligence. After three years of rapid growth and a number of research breakthroughs DeepMind made international business headlines when it was acquired by Google.

Computer Laboratory appointments

In October 2018 the department will welcome three new members of staff.

Andreas Vlachos is joining as a University Senior Lecturer. He will be a member of the Natural Language and Information Processing Research Group. Andreas has spent the last three years in the Department of Computer Science at the University of Sheffield.

Andreas is no stranger to Cambridge having received his PhD from the University in 2009.

Dr Alice Hutchings is joining as a University Lecturer.

Alice is currently a Senior Research Associate in the Department and a researcher in the Cambridge Cybercrime Centre, an interdisciplinary initiative combining expertise from the University of Cambridge's Department of Computer Science and Technology, Institute of Criminology and Faculty of Law.

Ryan Cotterell is joining the Department as a University Lecturer.

Ryan joins from the Center for Language and Speech Processing, Johns Hopkins University where he has specialised in Natural Language Processing, Computational Linguistics and Machine Learning.

Conference news

While presenting at an academic conference is an important part of a researcher's life, it is unusual for an undergraduate to have a paper accepted. So Part II student Ran Zmigrod was given a great opportunity when he was invited to present a paper on his Part II project at the International Conference on Interactive Theorem Proving (ITP).

Ran's work is tied to that of his supervisors Dr Timothy Griffin and PhD student Matthew Daggitt.

Ran said 'ITP was my first academic conference and was a fantastic learning experience for me to better understand the different kinds of academic work done in this field. It was particularly interesting to see how theorem proving is being used in different areas of computer science, ranging from pure mathematics to more practical applications such as paper marking or Matthew's routing work.'

Research in the news

The New Scientist has published an article, 'Uncrackable computer chips stop malicious bugs attacking your computer', which covers CHERI and other projects relating to security–focused computer architectures.

The work on CHERI (Capability Hardware Enhanced RISC Instructions) has been led by Dr Robert Watson. He has directed work on the CHERI architecture from the 'ISA up', designing the hardware–software secu-

rity model, and has led the CHERI software development team working on OS support, compiler support, and applications.

Dr Amanda Prorok was recently interviewed by The Naked Scientists as part of the show 'Naked on a Punt'.

Dr Prorok's research covers robot networks and cyber–physical systems, including algorithms for coordination, control and planning, with applications to multi–vehicle systems, automated transport, and robot swarms.

University Open Days

The Computer Laboratory recently opened its doors to students considering making an application in October 2018 for entry in October 2019 (or deferred entry to October 2020).

Chatting to students in the Intel Lab

The days were a great success: 373 students attended a series of subject talks as well as demonstrations of student projects and faculty research.

Student prizes 2018

G-Research Prize for The Best Part IA Student awarded to **Dusan Zivanovic** (T)

G-Research Prize for The Best Part IB Student awarded to **Alicja Chaszczewicz** (JN)

ECM Prize for The Best Part II Student awarded to **Gary Guo** (PET)

Ensoft Prize for The Most Improved Part II Student awarded to **Joshua Wong** (HH)

G-Research Prize for the Best Individual Project in the Computer Science Tripos awarded to **Pushkar Mishra** (HOM)

The following students were awarded Palantir prizes for highly commended project dissertations:

Beth Barnes (TH), **Gary Guo** (PET), **Hrutvik Kanebar** (K), **Peter Rugg** (CHU), **Henry Thompson** (Q), **Joshua Wong** (HH), **Wenying Wu** (JE), **Ran Zmigrod** (F)

Entrepreneur First Prize for the Best Part III Student awarded to **Nathaniel Alcock** (K)

Google Prize for the Best Part III Research Project awarded to **Stella Lau** (T)

Winton Capital Prize for the Best MPhil Student awarded to **Nandor Licker** (T)

Google Prize for the Best MPhil Project Report awarded to **Sian Gooding** (F)

Palantir Prizes for Highly Commended MPhil Projects awarded to **Ioana Bica** (CHU) and **Thomas Sherborne** (CC)

Examiners' Prizes for Highly Commended MPhil Projects awarded to **Dominic Celiano** (CHU) and **Dingcheng Yue** (M)