The Ring

Issue XXXIX — May 2015

GeoSpock 4
The future of big data management

JKU & Associates 6
Helping companies hire the best people

Research Skills 9
Random number generation using genetic programming

Ring news

Ringlet Bar Events

Many thanks to Operis for hosting April's London Ringlet Bar.

Operis, co–founded by David Colver (CHR MA80), is located in the heart of the City of London. Guests not only enjoyed a drink or too but also the excellent views of Tower Bridge, the Shard, and the City.

Sunil Shah (F MA09) interrupted his training for the Escape from Alcatraz Triathlon (see Who's Who) to organise the Bay Area's third Ringlet event.

Enjoying a beer at the Bay Area Ringlet event

Lab grads converged on Steins Beer Garden in Mountain View to chat over some of the 31 taps of craft and import beer on offer.

If you would like to sponsor a Ringlet event or have any suggestions, please email cam–ring@cl.cam.ac.uk.

Hall of Fame Awards 2015

The winners of the 11th Cambridge Ring Hall of Fame Awards were announced on March 25th 2015 at Queens' College, Cambridge.

Below are the winners in each category.

Company of the Year: **SwiftKey**

Product of the Year: **Bromium for vSentry and LAVA**

Publication of the Year: **Daniel Wagner, Andrew Rice and Alastair Beresford for "Device Analyzer: Understanding smartphone usage"**

The 2016 Annual Dinner and Hall of Fame Awards will take place on April 13th at Queens' College.

Events calendar

2015

June

Wednesday 3rd, 6pm
London Ringlet

August

Tuesday 4th, 6pm
London Ringlet

October

Thursday 1st, 6pm
London Ringlet

December

Tuesday 1st, 6pm
London Ringlet

2016

April

Wednesday 13th, 7pm
Annual Dinner
Queens' College

Who's Who

Stephen Allott (T BA80), Crown Representative for SMEs in the Cabinet Office, delivered a talk (Digital by Default — A Paradigm Shift in Government) at the University of Cambridge Computer Laboratory. The UK has been held up as an exemplar for digital government, with White House CTO Megan Smith commenting that the UK is currently years ahead in terms of digital government.

Harry Barman (K PhD90) is now working at Citadel LLC where he is a senior associate.

Christian Clough (CL MPhil11) is working for Ginger.io in California.

Robert Cooper (CHU PhD88) is President, CEO and co–founder at Embue. Based in Boston, Massachusetts, Embue is developing a smart control platform for multi-family apartment buildings that helps property managers save energy, improve operations and reduce risk.

Charlie Delingpole (T MA05) is co–founder of Marketinvoice.com.

Gavin Dolling (F BA97) is now working with **James Green** (F MA96) and **Jonathan Custance** (JN MA95) at Green Custard.

Anne Marie Droste (CLH MPhil14) is Head of European Outreach at Entrepreneur First.

Hermann Hauser (K PhD) CBE, FRS, FREng has been awarded an honorary knighthood in recognition of his services to engineering and industry.

Dr Hermann Hauser

Graham Helliwell (CHU BA11) is working at Red Gate Software as a software engineer.

Vaiva Imbrasaite (BA11 PhD15) is now working as a software engineer at Google in Canada.

Dafydd James (R BA03) is currently working at the Financial Times as a software developer.

Aaron Kirkbride (CAI BA14) is a software engineer at YPlan.

Dmytro Kislov (G BA11) is a software engineer at Improbable.

Jennie Lees (T MA03 MPhil05) is a systems engineer with Nilas in San Francisco.

Matthew Lent (W MPhil13) has co–founded Indigo Panda Labs inc with fellow Computer Lab graduate Yarden Eitan. The company is building a new dating app.

Anton Lokhmotov (PhD07) recently left ARM to start his own company, dividiti.

Iulian Nitescu (CLH MPhil10) is co–founder and CTO of Graphmasters.

El Ng (CC MPhil11) has joined HGST where she is an engineer.

James Oldfield (CHU Dip05) is working as a technical consultant for Cubica Technology Ltd.

Niccolo Pantucci (HOM MA06) has co–founded Zenit and Siasto, both in the San Francisco Bay Area.

Hok–Him Poon (CAI BA06) has left Bloomberg and co–founded JKU & Associates.

Kerry Rodden (NEW PhD91) is a Senior Staff User Experience Researcher at Google in California.

Sunil Shah (F MA09) is participating in the gruelling Escape from Alcatraz Triathlon on June 7th 2015. The triathlon starts with a 1.5 mile swim from Alcatraz Island in the San Francisco Bay, continues with an 18 mile bike ride and concludes with an 8 mile run through the Golden Gate National Recreation Area. The finish is at The Marina Green.

Amar Sood (T BA14) has started wym.io.

James Steele (F MA04) has joined Brocade where he is a senior software engineer.

Neil Stratford (F BA96) is a director at Binary Fen Ltd.

Bjarne Stroustrup (CHU PhD79) has been awarded the AITO Dahl-Nygaard Senior Prize 2015 for the design, implementation and evolution of the C++ programming language. He has also received a 2015 Fellows Award by the Computer History Museum.

Bernard Szczech (F MA82) is Chief Executive at IBM Services Centre UK Ltd.

Rob Thatcher (CHU MA98) has recently joined Option Computers as Head of Development.

Bob Watson (CHU MA77) is now working as a freelance photographer.

Richard Watts (SE MA95 PhD01) has recently become a Director of Studies in Computer Science at Selwyn College, Cambridge.

GeoSpock

Steve Marsh sees GeoSpock as the future of big data management.

TR: You've taken the entrepreneurial route from the off. What inspired you to start your own company?

SM: I've always been interested in technology's role in improving the world around us. I first started out by building mobile applications to solve a problem my friends had, which was essentially a "find my friends" app. I realised that this increased contextual awareness could enhance your experience of the world around you — even something so simple as to tell you where your nearest friends were and if they were in the mood for a coffee, could really improve your day–to–day life.

I started thinking bigger than my friend–group and social applications — I came to realise that there is a whole information layer that permeates the real world, but it's inaccessible and invisible to most people. Technology would allow you to tap into this information — just think for a moment how powerful Google maps on your smart phone actually is!

Unfortunately, existing geospatial solutions are designed to handle only relatively static data, but as we know the real world is constantly changing. Also, with more devices than ever generating increasingly more dynamic data this problem is getting ever larger — that's what GeoSpock was built to solve. We're initially focused in the location–information sector, but we're expanding our future horizons towards meteorological data, facial recognition, voice identification, and even genomics.

TR: Can you tell me how GeoSpock has stolen a march on existing geospatial database technologies?

SM: Existing database solutions were designed decades ago to handle static data which rarely changed, and even newer NoSQL databases were not designed to cope with the rate at which data is being generated today. Ordinarily you have to make a trade–off between Scale, Data throughput, and Responsiveness — at GeoSpock we weren't happy with only two out of three.

We decided to take a clean–slate approach, to go back to basics and design a technology from the ground–up that would be a massively scalable, real–time database for big-data — something that would run on an entire datacentre out of the box, a product designed to handle the huge data problems of today.

Luckily, I was finishing my PhD with Prof. Simon Moore, working on a project building custom super–computer architectures for real–time simulation of extreme–scale neural networks. A lot of the same lessons of how best to partition your problem and how to optimise data flows through the system were extremely influential in the design of the GeoSpock architecture.

TR: GeoSpock graduated from the TechStars accelerator earlier this year and launched a Series A funding round aimed at raising at least £2.5milion. What are your plans for the next 12 months?

SM: The Techstars accelerator was immensely helpful and we have received a lot of positive feedback and investor attention following our presentation at "Demo Day" back in February. It helped us build an incredibly powerful network of contacts and generated a substantial amount of inbound interest. We are expecting to close our fund raise by the end of June and we have already had a significant chunk of the round committed already.

We are really looking forward to the next chapter in GeoSpock's history. There's going to be a lot of changes and it's an extremely exciting time for us.

...we can help our clients open up new markets for their existing data as well as give them the ability to store and utilize greater volumes and types of data than they could before.

We have a very aggressive expansion plan in the works that will involve building a fully–fledged sales organisation to capitalise on the traction we are gaining in the geospatial database market, as well as further expanding our engineering team so we are able to build products which address a wider array of markets such as: logistics, mobile applications, biometrics, financial and security.

In the grand scheme of things we are just getting started but it has been a fantastic journey so far.

TR:What is the business model?

SM: The first version of the GeoSpock product is a Database–as–a–Service that is securely sandboxed, easy to integrate into any existing system, and is hosted on top of Google's cloud infrastructure. This allows us to dynamically scale our service to address our client's needs and we have a simple tiered charging plan based on the levels of usage. Our ability to handle extreme data sizes whilst maintaining real–time performance has made us attractive not only to other startups but also to large–scale enterprise clients, with our initial focus being in the mapping, logistics and insurance sectors.

> *Data is becoming the new currency of business, and technology is proving to be an increasingly more important driving force.*

We're working with our initial clients, such as Ordnance Survey (the UK's national mapping agency) to provide a platform to enable them to make use of large sets of location data that can be updated and queried in real time. With our enhanced performance, compared with even the latest NoSQL offerings, we can help our clients open up new markets for their existing data as well as give them the ability to store and utilize greater volumes and types of data than they could before.

Part of the future roadmap for GeoSpock is to create a containerised version of the product that can be deployed on any client's private infrastructure — with a simple software–licensing model on a per-machine basis. Having this flexibility allows us to address additional markets such as finance and security, where traditional cloud–based offerings are not always suitable.

Data is becoming the new currency of business, and technology is proving to be an increasingly more important driving force. As such, we are seeing that even large organisations are pushing extremely hard to innovate and are becoming dependent on new technologies.

Ten years ago very few businesses would be willing to abandon established suppliers such as Oracle and SAP for any of their core systems but, in order to maintain their competitive advantage, there's now a strong appetite to embrace the offerings of the new–wave of enterprise software companies. This makes it a very exciting time not only for GeoSpock but for technology in general.

Further information about GeoSpock can be found at: http://www. geospock.com/
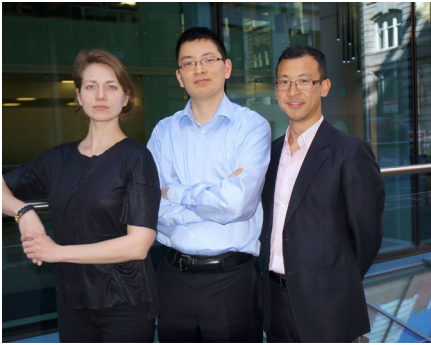
JKU & Associates

Hok–Him Poon explains how he's helping companies hire the best people.

TR: What inspired you to start JKU & Associates? Is it a recruitment agency?

HHP: From our past corporate careers, Jason, Vera and I (the co–founders) found that job interviews varied in standard — some had overly high expectations in specific areas, some had subjective feedback that was hard to justify. The big question is "Do these interviews accept candidates set to become star performers, and reject those who are destined to underperform?"

The Harvard Business Review reports that "as much as 80% of employee turnover is due to a bad hiring decision." We believe that good hiring decisions are made with the support of hard evidence rather than pure gut instinct. We are certainly not a recruitment agent! We founded JKU & Associates because we want to help our clients make better hiring decisions by analysing data both past and present.

...as much as 80% of employee turnover is due to a bad hiring decision

TR: What kind of data are you able to analyse? Do you offer anything for companies who don't currently collect this kind of data?

HHP: We are concerned with any data in the hiring process — this includes the candidates' CVs and interview feedback — as well as employee performance data. Many companies already assess candidates with some scoring system. These provide a good basis for analytics.

There are a few large corporates with sufficiently sophisticated hiring processes which capture historic data. For these companies we can offer our data analytics service and we can help answer questions such as "what did a typical star performer's profile look like when they interviewed?"

For the majority of companies that do not capture data currently, we offer an Application Tracking System (ATS) which is a hiring workflow tool. The ATS helps the daily management of hiring pipelines and at the same time collects data. After a year or so, we can offer our analytics service to our ATS clients to help them gain insights into their processes.

Finally we provide interview masterclasses to clients wanting to improve their interview practices. The masterclass lays out a framework for assessing candidates in a more objective manner. Concepts learnt in the masterclass can be applied directly in the ATS.

TR: This works for large corporates with regular intakes of staff but what about SMEs?

HHP: It's fair to say that, for small companies, it is even more important to hire the right people into the right roles. SMEs can have a hard time competing with large corporates who spend more resources on recruitment agencies and marketing. Our ATS comes with features like integration with LinkedIn, to help our clients source candidates for themselves in a targeted manner. This way our clients are less reliant on head–hunters to provide them with a pipeline of candidates.

Some companies treat their candidates like clients — they try to maintain a relationship with them. Even if a candidate is not hired first time around, a company might approach them again in the future about vacancies of interest. This is good branding for the firm, and it also expands their talent network. SMEs will benefit from conducting recruitment like this and our ATS has CRM–like features to help our clients manage this.

TR: It's very costly for a firm to terminate an underperforming employee. How would companies use your services to tackle this problem?

HHP: Sometimes companies are not aware that they are looking for the wrong qualities in candidates. One client preferred hiring candidates with extensive knowledge and experience in the field. Through our data analytics, we discovered that, for that particular role, those who were rated highly for knowledge and experience did not neces-

sarily perform well. On the other hand, those who did well in problem solving were much more likely to exceed expectations in the role. This is not necessarily true for every role, but by providing feedback like this, our clients can focus on areas which really affect performance during their interviews, thereby making better hiring decisions.

Recruitment consultancy firm Talent Q reported that bad hires "cost UK businesses £5b a year". We have already helped one SME client increase the number of great hires (employees who exceed expectations) by 13% from the previous year, and reduce their bad hires by 27%. They estimate that avoiding the bad hires has saved them £300,000 in salaries, pension, lost sales etc, so we know our method works.

TR: There's been significant attention on gender diversity in the workplace. Could your analytics help companies achieve their hiring targets on this issue?

HHP: We've done one such study for a client specifically hiring MBAs over the past year. We found that fewer women applied for the position compared with the demographic in MBA programmes worldwide. There could be many reasons for this, the wording of job posts being one such reason. Our ATS has the ability to perform A/B testing on job posts to help clients find a gender neutral version.

We also found certain biases (some towards women, and some against) during the interview process, and we were able to show that women were held to a higher bar than men. Being able to measure this is a powerful first step for any company wanting to improve on this issue.

The issue of gender diversity goes beyond recruitment of course. We believe we'll be able to provide some insights into the topic of retention when we move into the performance management space.

TR: What are your own experiences of hiring?

HHP: As an interviewer I have sometimes seen ego contributing to the flow of questioning. Such behaviour leads to confirmation bias and diverts focus away from other aspects of the candidate. Interview training courses largely taught us what we could or couldn't ask from a legal perspective, they didn't teach us how we should assess candidates for any particular role.

However, I have been in interviews where the other interviewer worked with the candidate to solve problems and asked probing questions. By the end, we had a good idea about the limits of the candidate's abilities and the candidate found they had learnt something from the experience.

TR: You recently won a grant from Innovate UK. What are your next steps and your longer term goals?

HHP: We're very excited to have won the grant. It is great confirmation of our beliefs and our methodology. We are using the grant to expand and hire full–time staff in order to scale and enhance our service offering. In the short term we will be focused on fully automating our analytics algorithms. In the long term we believe we can prompt a shift in standards in the recruitment landscape.

TR: What are your views on recruitment trends in the next few years?

HHP: Recruitment agencies occupy a crowded space, and yet their role is increasingly diminished with technology. In recent years we have seen a growing number of communities like HackerRank and Gild which help companies source talent for themselves. I think these type of networks will become more prevalent, and more efficient processes mean that SMEs will be operating on a more level playing field in the 'war for talent'.

There's also been an increasing focus on using data analytics to drive decisions in HR functions. We will see the big players like Oracle and IBM offering integrated HR solutions where reporting and analytics will make use of data which spans recruitment, performance management, staff management and other functions. However, at the moment the market is fragmented and this provides room for start-ups like us to disrupt the market.

You can find out more at http://www.jkuassociates.com/ or contact info@jkuassociates.com.

Hall of fame news

Angani

Kenyan–based Angani, the first fully auto-mated cloud infrastructure company in the region, has launched its cloud and hosting services.

With Angani's cloud platform, users can have a new server operational in a secure, reliable datacenter within 15 minutes.

Bromium

Bromium has been named a finalist in the SC Awards 2015 Europe for outstanding threat solution products and services in informa-tion security. Bromium vSentry is recog-nized in the "Best Advanced Persistent Threat (APT) Protection" category, which acknowl-edges superior products and services that help customers address the most pressing cyber–security threats. The winners will be announced at the SC Awards Europe cere-mony to be held June 2, 2015, in London.

Bromium vSentry was named Product of the Year at the Cambridge Ring's Hall of Fame Awards 2015.

Jagex

Jagex's Block N Load, an online multiplayer shooter has launched. A number of other games are currently moving through devel-opment and Jagex is set to launch into the collectable card game genre.

Linguamatics

Linguamatics was named in KMWorld's list of "100 Companies That Matter in Knowl-edge Management" for the second year running.

Masabi

Transport for Athens (OASA Group) and Masabi, the leader in transit mobile ticketing and fare collection, have deployed mobile ticketing in the city across all modes of public transport. The deployment represents the city's first implementation of a digital ticketing system that supplements its co–ex-isting paper ticket cash–based operation. Athens has rolled–out Masabi's end–to–end mobile ticketing system, JustRide, which has been successfully deployed in other large cities including; Boston, London, San Diego and will be launching in New York.

Raspberry Pi

In February, Raspberry Pi celebrated its third birthday. The weekend–long birthday party was held at the Computer Laboratory where 1,300 people enjoyed a full programme of lectures, workshops and demonstrations of a vast array of technological innovations.

RealVNC

RealVNC is inviting developers to sign up with VNC Developer and be the first to access the new VNC Software Develop-ment Kit (SDK), with built–in VNC Cloud connectivity.

VNC Developer, to be launched in summer 2015, will enable entrepreneurs and OEMs to partner with RealVNC to integrate VNC into existing products and services, build new products with VNC technology at the core, or invent entirely new opportuni-ties in any market where a combination of visual remote access and reliable cross–plat-form connectivity can provide a compelling customer experience.

RealVNC has also released its flagship VNC product for the Raspberry Pi, enabling users to connect to their Pi from any Windows, Mac or Linux computer. Once VNC has been downloaded to the Pi users can apply a Free license or, for an enhanced set of features, a Personal or Enterprise license. Raspberry Pi users will also be able to connect to their Pi from an iPad, iPhone, Android or Chrome device by downloading RealVNC's free VNC Viewer app which is available in the Apple App Store, Google Play or the Chrome web store.

Ubisense

Ubisense has launched two major new modules for its market–leading Smart Factory system.

Smart Factory can help manufacturers sustain continuous flow, optimize efficiency and reduce errors in manual assembly proc-esses. By accurately identifying and locating process–critical assets, Smart Factory provides real–time operational awareness, adaptive control and data–driven insights.

Research Skills course

Philip Leonard: Random Number Generation Using Genetic Programming

For my undergraduate final year project/dissertation I compared two methodologies of Genetic Programming (GP) for the task of evolving high entropy Pseudo Random Number Generators (PRNG). The first was the traditional GP methodology, where programs (in our case PRNGs) are represented as individual binary trees and are individually evaluated and tested. The second was the Single Node Genetic Programming paradigm recently developed at the University of Liverpool, which implements the idea of dynamic programming into the GP framework by using a graph interpretation of programs. Programs are represented as nodes in a graph, whose successors are subsequently part of that program. Outputs and fitness values are recursively calculated in a dynamic programming fashion. As such, it has been shown that simple SNGP implementations terminate much quicker and produce higher numbers of fitter solutions compared with equivalent GP implementations. The aim of the project was to demonstrate that these results were still obtainable for a complex problem like Random Number Generation.

RNGs have many computational, scientific and societal applications. They are a key component of: cryptography, statistical sampling, password generation online gambling, and randomized algorithms. Given that hardware RNGs are expensive and generally inaccessible, PRNGs are an efficient and inexpensive way of mimicking randomness using a deterministic mathematical algorithm/equation. Therefore it was not only a case of demonstrating SNGP superiority over GP in this project, but also providing an efficient way of producing these equations for practical use.

Using research conducted by John Koza (the pioneer of GP) on evolving PRNGs using GP, a preliminary of the project was to replicate his work and results before comparing it to the SNGP paradigm. After this I was able to show that the equivalent implementation in the SNGP paradigm produced smaller, more efficient, higher entropy (fitness) solutions at twice the rate, and over six times faster than GP. I was also able to show that the RNGs obtained from these evolutionary methods outperformed the C PRNG and a hardware RNG that used atmospheric noise in order to generate random numbers. Not only in terms of entropy was this true, but also for almost all of the statistical tests in the National Institute of Standards and Technology (NIST) \ Test Suite for Random and Pseudorandom Number Generators for Cryptographic Applications".

One of the shortfalls of the SNGP RNGs with regards to the NIST test suite was its failure in the Fast Fourier Transform (FFT) test. A multi objective approach could be adopted in order to evolve RNGs based on entropy and their performance in the FFT test. Coupled with this,continuation down the research avenue with regards to testing SNGP performance over GP for complex problems, could continue to reinforce the SNGP paradigms validity.

The results of this work will be presented at, and published in the proceedings of, the 2015 ACM Genetic and Evolutionary Computation Conference.

The MPhil in Advanced Computer Science has just one compulsory module: Research Skills. This module aims to teach the range of skills required for a successful research career: critical reading, summarisation, and review of research papers; writing of technical documents and research papers; presenting research findings in seminars and at conferences; and the design and analysis of experiments.

The best essays from the academic year are being published in 'The Ring'. This is the first of these essays.

Computer Laboratory news

Professor Ross Anderson awarded 2015 Lovelace Medal

Professor Ross Anderson FRS FREng has been named as the recipient of the 2015 BCS Lovelace Medal awarded by BCS, The Chartered Institute for IT. The award is presented annually to individuals who, in the opinion of BCS, have made a significant contribution to the advancement of Information Systems. It is the top award in computing in the UK.

Ross Anderson, Professor of Security Engineering, has been awarded the medal in recognition of his many contributions to building security engineering into a discipline.

As computers and communications are embedded in phones, watches, cars, utility meters, medical equipment and even kitchen appliances, security engineering is becoming ever more important. Even crime is going online; physical crime is falling while online fraud and abuse are rising sharply. Debates over the tensions between security and privacy move steadily up the political agenda.

Professor Anderson's work has cleared many paths in this thicket, and opened up new subjects ranging from hardware through usability to security economics. His book, 'Security Engineering — A Guide to Building Dependable Distributed Systems', has become the standard text. On the practical front, he is one of the designers of Home–Plug AV, which carries broadband over power lines and is used as a wireless LAN extender; of prepayment electricity meter mechanisms, used to electrify millions of homes worldwide; and he pioneered the study of API security, which led to the redesign of most of the hardware security modules used to protect bank PINs (as well as the magic numbers used to recharge utility meters).

In the world of finance, he has documented many ways in which payment systems can fail; by explaining complex technical frauds, he has enabled victims to get refunds. He also made important early contributions to peer–to–peer networks, to the tamper-resistance of smartcards and the robustness of copyright marking systems.

He has built up a security research team at Cambridge working on topics ranging from physics to psychology. His team has collected large quantities of data on cybercrime, helping to explain a variety of online scams. However, the core of its work is understanding how to build systems that remain secure despite growing complexity and millions of users who may not just be in competition with each other, but even in conflict: in short, how we can engineer security at global scale.

Complex systems with many stakeholders often fail because the incentives are wrong, so a security engineer needs to understand game theory at least as well as cryptanalysis. So his most significant recent achievement has been establishing security economics as a thriving academic discipline. He has also been a frequent contributor to policy debates on security, privacy and human rights.

Said Turing Award winner Butler Lampson of Microsoft Research: "Ross Anderson is probably the world's most distinguished academic in the field of practical computer security. He is certainly the most original. He is the person I would go to for the most thoughtful and well-informed opinion on any cybersecurity issue."

Sonic Pi

Sonic Pi was a finalist in the 2015 Music Teacher Awards for Excellence! in the category for Best Music Education Product.

Sam Aaron, creator of Sonic Pi, has been running a wide range of workshops. These have included workshops for both primary and secondary school pupils as well as sessions for teachers. His BBC Live Lesson was streamed to an estimated 40,000 school pupils nationwide.
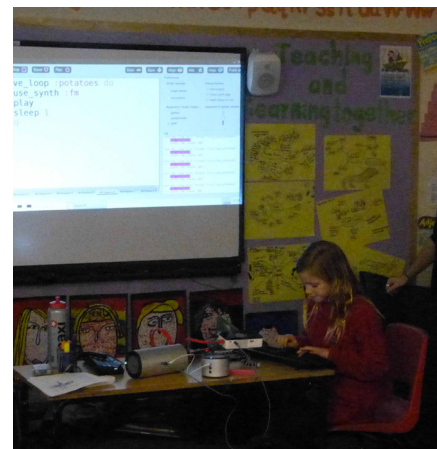
Assembly at the Spinney Primary School

Sam gave his first solo live coding performance with Sonic Pi at the biennial festival NODE —Forum for Digital Arts in Frankfurt, as part of the concert 'Repetitive Beats & Repetitive Conditionals'. He was accompanied by Gregor Schwellenbach on the piano. An appreciative audience asked for an encore.

Further details about the Computer Laboratory's outreach activities can be found at: http://www.cl.cam.ac.uk/outreach/

Coding Summer School for Girls

The Computer Laboratory, in conjunction with Cambridge Coding Academy, is holding its inaugural summer school for girls. This exciting programme, which will take place on 10-14 August, aims to spur excitement in digital innovation and inspire young women to explore opportunities in technology and computer science. Over five days, 80 girls aged 16-19 will learn programming fundamentals and gain valuable coding and thinking skills that are in demand across all industries.

The Coding Summer School for girls has been generously sponsored by Sophos, CSR and RealVNC, allowing tickets to be offered at a heavily subsidised price of just £99 for the week.

Said Professor Ann Copestake, Deputy Head of Department: "Karen Spärck Jones had a slogan 'Computing is too important to be left to men.' I think this Summer School will show computing is also too much fun to be left to the guys."

Further details about the Coding Summer School for girls can be found at: http:// cambridgecoding.com/august-summer-school/

Part IB Group Design Projects

The Group Project is a popular part of the Computer Science Tripos. Projects are designed to reflect current industrial practice, and students learn some of the delights and pitfalls of working as part of a software development team.

Most of the work is undertaken during Lent Term and culminates in an afternoon of presentations. Those who attended this year's presentations were thoroughly impressed with our 2nd year students.

Details of all this year's projects can be found at: https://www.cl.cam.ac.uk/teaching/ group-projects/

Group Delta: Building the matrix
Joint winner of the best technical project
Client: Radmillo Racic
Company: IMC

Group Alpha: Live coding for blind children
Client:Will Thoms
Company: Morgan Stanley

Wheeler Lecture

The fourth Wheeler lecture will be given at the Computer Laboratory on Tuesday 26th May, 2015. The speaker will be Butler Lampson, Technical Fellow at Microsoft, and Adjunct Professor at the Massachusetts Institute of Technology.

The abstract and details of how to register can be found at: http://www.cl.cam.ac.uk/ seminars/wheeler/