

UCL INTERACTION CENTRE
DIVISION OF PSYCHOLOGY AND LANGUAGE SCIENCES
AND DEPARTMENT OF COMPUTER SCIENCE



UCL



UCLIC News 2012

June 2012 Contents

Dream Fellowship	3
ILHAIRE project	4
New Interaction Research Lab	4
Workshops in the Interaction Research Lab	5
Interactive floor display	6
UCLIC at CHI 2012	7
Public and Alumni Engagement	8
UCLIC@10 Event	9
UCLIC Teaching Programme	10
Update on the SerenaA project	11
Update on CHI+MED	12
Update on Interactions on the Move	12
Update on Pain Rehabilitation project	13
UCLIC Profiles	14
Interaction Design – Beyond Human-Computer Interaction	15
UCLIC Seminars	15
Contacts	15

Editorial

Welcome to our new interactive
UCLIC newsletter for 2012!

The last two years have seen many changes, including the rapid expansion of our group as well as a change of leadership last September, when **Professor Ann Blandford** stepped down as Director. We are indebted to Ann for providing such effective leadership during the previous seven years, but we are also happy to welcome **Professor Yvonne Rogers** who arrived from the Open University as our new Director. With Yvonne's arrival came a small team of researchers who have been busy creating a new Interaction Research Lab.

As our students and researchers continue to come and go, so too have our projects progressed and you will find updates of our ongoing projects as well as information about new grants and activities below, including **Nadia Berthouze's** new collaborative European grant and Yvonne Rogers' Dream Fellowship. Many of our researchers have also become more involved in public engagement activities and we are becoming a regular fixture at **UCL's Bright Club!**

We also reached an important milestone, turning ten years old last year! This was celebrated with a day of research talks and displays followed by much wine and merriment at our birthday party and alumni networking event, **UCLIC@10**. Please read the short articles below about our recent projects and developments – there is also more detailed information about who we are and what we do on our **website**. Here's to the next ten great years!

www.ucl.ac.uk/uclic

Dream Fellowship

At the same time Yvonne was offered the directorship of UCLIC she was awarded a prestigious EPSRC dream fellowship. The aim of this new scheme is to enable *“talented researchers to take time out from their every day activities, to give them the freedom to gain new knowledge of novel creative problem solving techniques, explore new radical ideas and develop new ambitious research directions that enable discovery.”*

That put her in a bit of a quandary as she had planned to take time out at exactly the same time as starting her new role at UCLIC. So she delayed its start for six months and then took off to Cape Town for a few months to embark on some “bold and radical thinking” with “a high degree of risk.” Her dream is to rethink the relationship between ageing, computing and creativity. In particular, she wants to make computers engaging, accessible and exciting to as many people as possible, with a focus on people who are getting older and retiring. To begin, she has been rethinking ageing as unleashing wisdom and rethinking ICT as interactive ingredients.

To truly think out of the box, though, she is studying creativity and cooking. At first blush, these may seem totally unrelated. But that is the point.

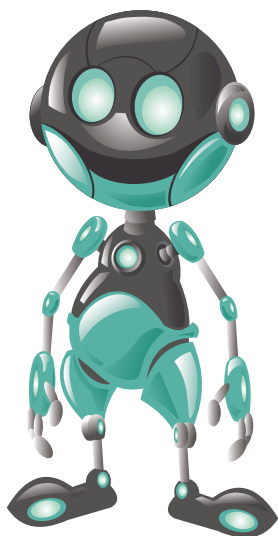
Her idea is to juxtapose the challenges of ageing with the understandings of creative cooking, moving back and forth between them to gain new insights. Chefs are very creative in how they use technology, each other, what they see around them as well as a multitude of ingredients to make new medleys of tastes, flavours, colours, textures, etc.

Based on the new insights, she plans to conjure up ideas for novel digital technologies to enhance the creative horizons of everyday people – who may be ageing but are physically, mentally and emotionally very active.



ILHAIRE project

Even though laughter is an important feature of human communication, so far very limited progress has been made towards allowing computer-based applications to deal with it. As machines are gaining a social role (e.g. companions), it is crucial that they are not blind to it. UCLIC is part of a multi-disciplinary team of experts from six countries around Europe that aims to lay the foundations of multimodal, multicultural laughter-enabled man-machine interaction. **ILHAIRE** aims to create computer avatars that are capable of recognizing and appropriately responding to different types of laughter. The project is funded under the **Future and Emerging Technologies (FET)** chapter of the 7th framework program for research in the European Union, a very competitive line of research funding in which less than 6% of research proposals get funding.



New Interaction Research Lab



Yvonne Rogers, Jon Bird, Rose Johnson and **Paul Marshall** have set up a new **Interaction Research Lab** on the 6th floor of the MPEB. The lab supports research and teaching activities in the area of ubiquitous computing, providing tools, equipment and bench space to enable the construction of prototype technologies as well as audio-visual equipment that can be used to study their use in diverse contexts. Technologies available in the lab include a Microsoft Surface and a DiamondTouch multitouch table, Arduino, Phidgets and Microsoft Gadgeteer physical computing toolkits, electronics components, a Kinect, iPads and infrared cameras that can track the movements of people through spaces.

As well as supporting research projects, the IRL has already hosted three physical computing workshops for the PhD and MSc students, been used to design and construct an LED floor display that is being installed in the MPEB, held collaborative video analysis sessions, hosted numerous demo sessions for visitors to UCLIC and students on the **MSc programme**, and supported projects by PhD and undergraduate students on behaviour change and wearable computing. It will be used by students from the MSc programme over the summer as they carry out their dissertation projects.

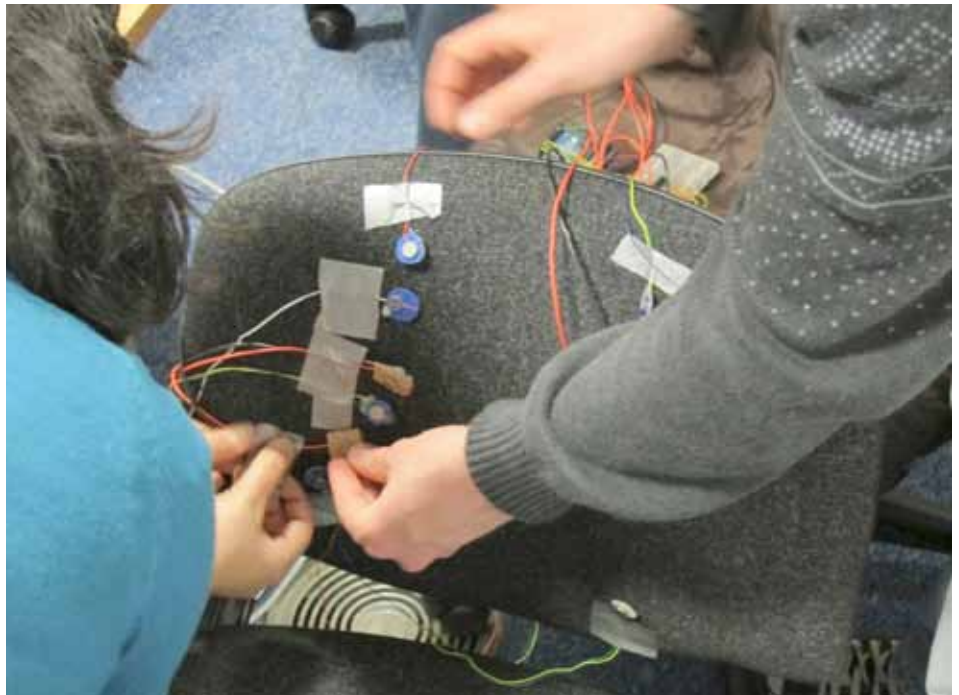
Workshops in the Interaction Research Lab

The **Interaction Research Lab** has organized three one-day physical computing workshops in the last 6 months. Over twenty post-docs and postgraduate students have been introduced to the Arduino microcontroller, a low cost, open source platform that enables people with very little electronics knowledge to rapidly prototype interactive systems. The workshops were organised and led by Jon Bird and Rose Johnson, with Paul Marshall and Stefan Kreitmayer providing support as demonstrators.

Participants started by mastering the Arduino equivalent of a 'hello world' program: switching an LED on and off. They soon progressed from blinking to changing the LED brightness in a more analog way and we then showed them how vibration motors (similar to the ones found in mobile phones) can be controlled with the same software with the addition of only a few more electronic components.

Over the course of the day, participants were shown how to build increasingly complex circuits, using integrated chips to control tens, and potentially hundreds, of LEDs and vibration motors. At the end of the workshops participants applied their knowledge and constructed a massage chair that they controlled

from a laptop running a Processing application, a popular open source software development platform. However, the techniques that participants learned are not just for toy problems: we've been using them in our research for several years to develop haptic feedback systems and interactive LED displays.



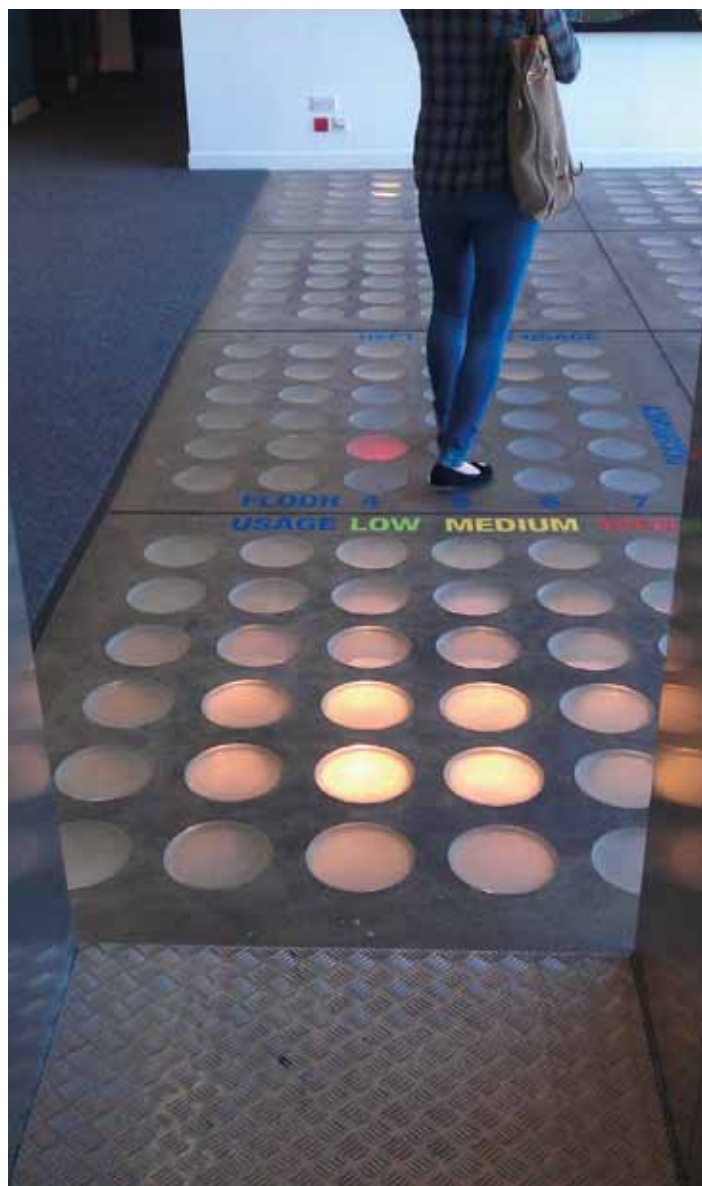
Interactive floor display

Display screens are widely used in buildings and public spaces both to provide information and for advertising. However, studies have found that people typically exhibit 'display blindness' and ignore the information presented on them. Floor surfaces are rarely used as a display medium, but our previous research has shown that interactive floor displays can capture the attention of passers-by in buildings and public spaces, not only providing them with information but also changing their behaviour.

We are continuing to explore the potential of interactive floor displays by installing one on the 5th floor of the UCL [Computer Science Department](#). In the foyer area outside the lifts, the floor consists of a concrete substrate pierced with a grid of 288 light wells. [Jon Bird](#) developed low cost and low energy use LED units that fit into the light wells and wrote custom software that drives an Arduino microcontroller to set the colour of each of the LED units independently. Siddarth Shah carried out an initial pilot study as part of his UG dissertation project using a 16 LED unit display to visualize energy usage and occupancy on four floors of the department. He found that the floor display was far more engaging than wall mounted screens in the department: not only did more people pay attention to the display but they spent more time looking at it and many reported that it had increased their awareness of energy usage in the department. We observed several people waiting in the foyer for a lift who became so engaged in looking at the display that they did not notice the lift arrive and missed it.

Danny Harrison is going to carry out further research for his MSc project on a larger floor display that uses 216 LED units to see if people can be encouraged to take more exercise by using the stairs rather than the lift in the department. To motivate them, he is developing interactive games on the display for which people earn 'game time' by using the department stairs rather than the lifts.

The development of the floor display was supported by £7000 from FuturICT (www.futurict.eu). This a European Commission Flagship Pilot project that aims to develop innovative ICT systems for addressing social and sustainability challenges.



UCLIC at CHI 2012

This year UCLIC, together with our collaborators, had a record bumper crop of papers, notes, videos meetings and workshops at the [CHI 2012](#) conference held in Austin, Texas. Amongst them we had a few prize winners: [Jonathan Back](#) with [Anna Cox](#) and [Duncan Brumby](#) came home with a CHI best paper award for their paper on 'Choosing to Interleave: Human Error and Information Cost' and [Amir Kamsin](#) came 3rd in the student poster competition for his poster with [Ann Blandford](#) and [Anna Cox](#) on 'Personal Task Management: My tools fall apart when I'm very busy!' We also brought along two teams of Masters' Students who won themselves a place in the Student Design Competition.



Kathy Stawarz reports:

"Early in May I had a privilege to attend CHI 2012 in Austin, Texas. We were invited to present our posters for the Student Design Competition, and UCLIC kindly funded our trip. It was an amazing conference, although slightly overwhelming: 4 days were packed with talks of varied length, poster sessions, and interactive presentations. Especially worth attending were Alt.CHI talks covering non-mainstream topics, and Interactivity, where researchers showed their interactive prototypes

and even allowed everyone to play with them. The conference also provided plenty opportunities to meet academics and people from the industry. I personally enjoyed MatriarCHI women's lunch the most, as I met there amazing women from various research institutes and had a chance to learn what they do. Overall, CHI proved to be a great place to make new connections, apply for jobs, and learn about interesting research. I would love to attend again."

To celebrate these achievements, UCLIC hosted a breakfast party for all UCL attendees and collaborators at Le Café Crepe in Austin during the conference. Mmm!

Public and Alumni Engagement

Public Engagement activities have been growing at UCLIC. This follows a national need for universities to show the public what they contribute to and to improve research impact. Public engagement can also help the development of skills of those involved and raise the profile of the individual, the department, the university and HCI. For example, [UCLIC TV](#) now provides a hub for films made by staff and students that include CHI videos like the award winning [Microwave Racing](#), student digital stories which are developed in an award winning exercise during induction week, and even a [UCL Bright Club](#) comedy gig on HCI. Some academics and consultants have reported using these films in presentations, classes and training on Human Error and interaction design (as far away as the US, Mexico and Australia). If you use them please get in touch and tell us how.

We are also developing teaching resources associated with [Errordiary](#) which is a live stream of people's funny, frustrating and fatal errors that we hope will also be used beyond teaching within UCL.

More traditionally, Yvonne and Ann have both given public lectures recently, whilst some researchers have done bite-sized public lectures hosted by UCL.

As well as these more traditional routes we are also engaging with school students. We recently spoke to a few hundred school students and parents by doing Microwave Racing 'live' at the [Brighton Science Festival](#)

and talking about the importance of interaction design on these devices and technology more broadly, including the devices doctors and nurses have to use. If you'd like to stay tuned in to these activities more regularly please link up with UCLIC through [Twitter](#), [Facebook](#) or [LinkedIn](#). Also, importantly, please share your own news and opportunities through these social media.



UCLIC@10 Event

Our **UCLIC@10** event, held on 4th November 2011, celebrated ten years of UCLIC, which has been under the astute Directorship of **Professor Ann Blandford** for the last seven years. The event was a huge success and was also the first alumni networking event in the HCI field promoted by UCLIC.

It took place in the Old Refectory in the Wilkins Building, along the theme of 'UCLIC Past, Present and Future' and was kicked off by **Professor Harold Thimbleby**, who was UCLIC's first Director. There were insightful presentations throughout the day by leading HCI researchers on topics ranging from collaborative technologies to games immersion to the design of medical devices.

Meanwhile, there was a great variety of mixed media displays in the South Cloisters, including Twitter fountains on the walls showing real-time Error diary tweets and messages from absent alumni. And for sentimental value, there were lots of photos of alumni from the MSc going back to the first course in Ergonomics in 1969 – it was curious to see how classes expanded and the interesting changes in hairstyles over the years!

After such an intensive day, attendees, much in need of refreshment, were ushered to the warmly-lit Jeremy Bentham Room where they were greeted by a spread of tasty nibbles and wine with the soothing murmur of jazz music in the background. **Professor Anthony Finkelstein** gave a heartfelt speech thanking Ann for her previous leadership and **Rachel Benedyk** created much joviality with her hilarious **poem** recounting the history of the Centre from its original inception as the Ergonomics Unit right up to our present new adventures with **Professor Yvonne Rogers** at the helm. The rest of the evening saw old friends catching up and reminiscing about the old days, but there was also a strong feeling of excitement about the future – and the extra case of wine we ordered as the evening drew to a close is testament to the feeling of high spirits shared by all!



UCLIC Teaching Programme

The [Teaching Programme](#) at UCLIC continues to thrive in a competitive marketplace, with over 50 new students joining the programme each year for an MSc, a PGDip or a PGCert, from 20 different countries around the world. The flexible attendance model is particularly popular with mature students in employment, who want to consolidate their practice of HCI or Ergonomics with an academic qualification, or who are looking to change career direction. The mix of background disciplines and experience among the students provides for fertile discussion in class!

Contributions from external practitioners continue to enrich the teaching, especially for the design modules where students learn to apply their HCI-E knowledge and skills to real-world problems. The benefit is two-way, with the outside companies helping to shape the graduates they may ultimately employ.

In the last two years we have introduced the students to the concept of public engagement, with some success. The students produce [“Digital Stories”](#) on the theme of explaining HCI to school children, and these have been used as part of the UCLIC-sponsored public engagement



campaign to teach user-centred design in schools ([Design 4 Real People](#)). One film was so successful it made the front page of the UCL website as a feature for World Usability Day 2011. This exercise also brought success for the teaching staff at UCLIC; Dominic Furniss received a UCL Provost’s Award for teaching innovation last year, and Rachel Benedyk presented the scheme to professional HCI teachers.

With two new academic staff joining the teaching team this year, we look forward to expanded opportunities for our taught students, and the continuing popularity of the UCLIC HCI-E course.



Update on the SerenA project

We can probably all think of times when serendipity has shaped our research and practice. In the past, many serendipitous experiences started as chance encounters in the library (or the pub or the coffee bar). If we want effective research spaces in the digital age, we need to find new means to facilitate these kinds of chance encounters without subjecting people to total information overload.

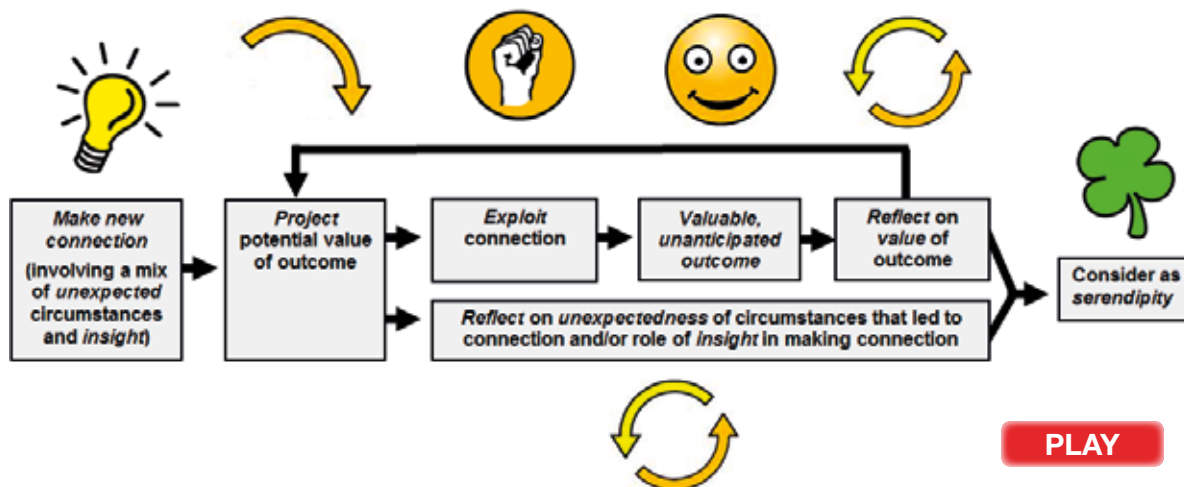
To better understand the experience of serendipity, we have conducted a rich qualitative study involving multidisciplinary researchers. They all told us stories about serendipity in research: some about ideas, some about meeting people. From these stories, we have developed a model that starts with events leading up to making a new connection that is unexpected and requires insight.

The individual has to exploit the connection. The outcome will be judged to be valuable, and impossible to predict before the connection was made. And to be recognised as serendipity, the individual has to reflect on the value.

The challenge remains: how do you design for something that depends on chance and insight? In the [SerenA project](#), we are focusing on non-obvious connections: introducing people to non-obvious literature or to people that have complementary interests. We are prototyping and testing personal and desktop tools that will make introductions, based on an agent architecture, exploiting publicly available information such

as websites and papers as well as information people choose to supply. The agent maintains a user model for each user, for identifying connections, making suggestions about meeting, and creating introductions so that people don't just talk about the weather, but are aware of their complementary interests.

We're facing many challenges such as the sheer volume of potentially relevant information and reasoning mechanisms. Also managing people's privacy so that they control what information is shared. And designing the interaction to be timely and useful and give people confidence in their control and in the recommendations made. Whoever said that designing for chance encounters might be easy?



Update on CHI+MED

CHI+MED (Computer-Human Interaction for Medical Devices) is an EPSRC-funded project to improve the safety of interactive (programmable) medical devices, such as infusion pumps. By understanding more about device design and human factors, medical errors can be reduced, thus saving lives.

Our goal is to learn more about medical devices and how people design, buy and use them in the real world. From this understanding we will investigate how to reduce the likelihood and consequences of human error. We are working with patients and their carers, nurses and other medical practitioners, manufacturers who create medical devices, NHS staff who purchase them and regulatory bodies who oversee patient safety.

Throughout our six year programme we will be working with a wide variety of people who are linked by interactive medical devices which deliver essential medication.

Our work blends computer science, cognitive psychology and medicine. We are investigating how devices are designed with a focus on how users have to program them, what can happen when erroneous inputs are given and how new technology can help. We are running laboratory-based experiments to understand the causes of human error and how they can be prevented. We are examining how people perform tasks in real-world situations, for example what happens when a busy nurse is called away in the middle of setting up an infusion pump? How likely are they to make a mistake when they return to complete the task?

We are also exploring interventions that can help manufacturers, clinicians, procurement staff and patients to help reduce the potential human error. Based on the understanding gained from these separate strands, we are developing analysis tools based on mathematical models of devices, human behaviour and of the wider situation to help predict where problems will occur. We are also exploring interventions that can help manufacturers, clinicians, procurement staff and patients to help reduce the potential consequences of **human error**.

Update on Interactions on the Move

Our **project** is nearing completion. After three years of intense work we have advanced our understanding of multitasking behaviour. We have published many top-tier papers in leading journals and presented our work at major international conferences. PhD student **Chris Janssen** has submitted his thesis and will be joining Microsoft Research in May 2012. Working with Shamsi Iqbal, Chris hopes to apply the basic knowledge developed on this project to make our interactions with in-car gadgets less distracting. Back at UCL, we are continuing to conduct research to understand how people multitask and how design can improve multitasking performance.



Update on Pain Rehabilitation project

The Emo&Pain project aims at building technology that motivates people with musculo-skeletal chronic pain to maintain a program of physical activity. This technology will be able to sense people's affective states and use this information to tailor the exercise program as well as the psychological support to the moment-to-moment needs of the person. Progress has been made in two directions. Firstly, we have created a database of multi-modal data (facial and vocal expressions, body movement, EMG) of people with and without chronic pain doing physical activity. Using these data, a set of behavioural studies has been carried out to identify the multi-modal cues physiotherapists and psychologists use to identify the affective state of the person. Using machine learning techniques, we are now building software that detects such cues. In particular, we are devising new affect recognition algorithms that are able to generalize the automatic recognition of the emotional state across different people and type of actions performed.

Secondly, qualitative studies (interviews, focus groups, questionnaires, blogs) involving different stakeholders have been carried out to understand the barriers and the needs of people with chronic pain during physical activity. Preliminary results have been published in various conferences

in the HCI, Machine Learning and Clinical domains. These results are now used to inform the iterative design of the multi-modal support system. More information can be found at: www.emo-pain.ac.uk. This project is in collaboration with [Imperial College](#) and [Leicester University](#).



UCLIC Profiles

Rowanne Fleck

Rowanne joined UCLIC in January 2012 as a researcher/lecturer. She completed her DPhil at the [University of Sussex](#) in 2008 looking at supporting reflective thought, particularly the reflective practice of teachers, with [SenseCam](#): a wearable camera which automatically takes a series of photographs. Following this she was involved in the [ShareIT](#) project and looked at collocated collaboration around shareable technologies such as tabletop computers. Her current research interests include considering reflection as a mechanism to promote sustainable behaviour, looking at family interactions around technology and considering people's sharing behaviours around and through technology.



Alex Douglass-Bonner

I studied psychology for my undergraduate degree at [UCL](#), just across the road in Bedford Way. There I took the HCI course, which changed my outlook so profoundly I decided to study it more. I took the Computing Masters at [Imperial](#) to learn more about programming, particularly AI and HCI. I came back to UCL to study HCI further on the UCLIC masters course, and am now using both of these skills in my PhD. My research interests are technology in healthcare, particularly in Chronic Pain, and studies of serious games in health and education. I like playing video games and salsa dancing in my spare time, and I have a great love of music, particularly British 50s Jazz.



Jo Iacovides

Jo has recently joined UCLIC as a post-doc on the [CHI+MED](#) project where she will be investigating errors that occur when using medical devices such as infusion pumps and developing methods to evaluate usability in this context. Her PhD research, carried out at the [Open University](#), explores motivation, engagement and informal learning within the context of digital games. She previously worked as a research assistant at the [University of Bath](#) on the JISC funded project "Racing Academy: the large scale implementation of a racing car simulation game in further and higher education".



Aisling O'Kane

Aisling is from Toronto, Canada where she gained a degree in Industrial (Human Factors) Engineering and a minor in Psychology from the [University of Toronto](#) and completed her thesis on driver distraction under Professor Mark Chignell. After graduating, she worked for almost three years in human factors engineering consulting in the safety critical domain. She moved to Sweden for her Masters in Interactive Systems Engineering at [KTH Royal Institute of Technology](#) and conducted her thesis research at the Mobile Life Centre in Stockholm and also at the Man Machine Interaction Centre at [TU Delft](#) in the Netherlands on user trust in technology, supervised by Professor Kristina Höök. After an internship at [Microsoft Research Cambridge](#), Aisling started her MPhil/PhD at UCLIC in January as part of the [CHI+MED](#) project concentrating on patient experience and the safe use of take-home medical technologies with Professor Ann Blandford.



Interaction Design Beyond Human-Computer Interaction

Yvonne Rogers, Helen Sharp and Jenny Preece published the third edition of their internationally acclaimed textbook, [Interaction Design: Beyond Human Computer Interaction](#) (2011, Wiley). The book offers a cross-disciplinary, practical and process-oriented approach to Human Computer Interaction, showing not just what principles ought to apply to Interaction Design, but crucially how they can be applied. It focuses on how to design interactive products that enhance and extend the way people communicate, interact and work. Motivating examples are included to illustrate both technical, but also social and ethical issues, making the book approachable and adaptable for both Computer Science and non-Computer Science users. There is also an accompanying [website](#), with resources to match the new edition.



UCLIC Seminars

UCLIC holds weekly seminars covering a wide range of aspects of HCI. The schedule exhibits international well known researchers as well as presentations from UCLIC's members.

The seminars are open to the public and they are usually held on Wednesdays.

You can find the schedule at:

www.ucl.ac.uk/ucl/news-events/seminars

If you are interested, please contact [Jo Iacovides](#) or [Harry Griffin](#) who are currently organising these.

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