Festival of Ideas

1st - 2nd May 2019

Festival of Ideas
1ˢᵗ – 2ⁿᵈ May 2019

Swansea University
Prifysgol Abertawe

Computational Foundry
Ffowndri Gyfrifiadol

Two days of provocative, stimulating and motivating interactions addressing critical computational topics

Curated by globally leading scientists – Professor Ben Shneiderman, Professor Jennifer Preece and Professor Alan Dix – we'll explore Algorithmic Accountability and Citizen Science. The event will be held in the new Computational Foundry www.swansea.ac.uk/science/computationalfoundry/

During the event we'll also be celebrating the UK's Digital Economy strengths with demos, posters and opportunities to talk with researchers across the UK.

Professor Alan Dix, Director of the Computational Foundry, shares his thoughts on the topics discussed as part of the Festival:

Algorithmic Accountability: "From computers that play Go, to cars that drive themselves and websites that seem to know what you want almost before you do; our world is filled with computer algorithms that are becoming ever more complex and ever more 'intelligent'. Yet, there is also another side: self-driving car crashes, racially biased search results, and leaked social media data used to influence elections. Will digital technology save the world or destroy it? Join us as world experts in computer science and artificial intelligence discuss these key issues of our time."

Ctizen Science: New Agendas, Broader Impacts: "In 1950s B-movies white-coated scientists poured frothing mixtures from test-tubes behind doors that said "No Entry". Today science has broken free of the lab: during the annual BBC Springwatch tens of thousands of volunteers contribute to projects counting bees and butterflies, ladybirds and hedgehogs. In 2015 the Open University iSpotNature application hit half a million observations. This 'Citizen Science' is real science, creating new knowledge that is helping us understand the world during a time of rapid environmental change. We have gathered together a panel of international experts, but this day is for everyone: how we can all contribute and all learn."

Festival of Ideas
Day 1 & Day 2

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Day 1: Algorithmic Accountability

Professor Shneiderman is holding a day's workshop to think deeply around the subject of algorithmic accountability on 1st May, together with a panel of experts comprised of:

- Professor Christopher Hankin, Co-Director of Institute for Security Science and Technology at Imperial College London

- Professor Richard Harper, Co-Director of the Institute for Social Futures at Lancaster University

- Dr Sandra Wachter, Research Fellow at Oxford Internet Institute

- Dr Brent Mittelstadt, Research Fellow and British Academy Postdoctoral Fellow at Oxford Internet Institute

- Professor Andrew Crabtree, Professor of Computer Science, University of Nottingham

- Ryan Carrier, Executive Director at ForHumanity

Day 2: Citizen Science: New Agendas, Broader Impacts

Professor Preece is holding a day's workshop to think deeply around the subject of Citizen Science: New Agendas, Broader Impacts on 2nd May, together with a panel of experts comprised of:

- Professor Muki Haklay, Professor of GI Science at University College London

- Professor Julia Parrish, Associate Dean College of the Environment at the University of Washington

- Dr Helen Spiers, University of Oxford, Biomedical Research Lead at the Zooniverse

- Prof Eileen Scanlon, Associate Director of Research and Innovation in the Institute of Educational Technology, Open University

- Professor Geoff Proffitt, Director of Knowledge Economy (Biosciences) at Swansea University

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Professor Jennifer Preece
University of Maryland

Jennifer Preece (workshop chair and presenter) is a Professor and Dean Emerita in the Information School at the University of Maryland, USA. She is particularly interested in how Human-Computer Interaction (HCI) and Interaction Design can support communities to collect and document biodiversity and environmental data through citizen science projects. She encourages HCI and citizen science specialists to partner on projects that involve the use of digital technologies. Ideally, such partnerships help to ensure that participants are engaged in planning the design of both the technology and the projects and their ideas and needs are taken into account. Currently Jennifer is the principal investigator of an NSF-funded project concerned with finding ways to support community driven environmental projects. She is an ACM SIGCHI Fellow, a member of several environmental advocacy groups, author of a broad collection of professional articles and books, and co-author with Helen Sharp and Yvonne Rogers of Interaction Design: Beyond HCI (5th ed., 2019) published by John Wiley & Sons.

Professor Julia K. Parrish
Associate Dean, College of the Environment, University of Washington

Julia K. Parrish is a Lowell A. and Frankie L. Wakefield Professor of Ocean Fishery Sciences, and the Associate Dean of the College of the Environment, at the University of Washington. She is also the Executive Director of the Coastal Observation and Seabird Survey Team (COASST), the largest beached bird program in the world. Julia has been honored as a NOAA Year of the Oceans Environmental Hero, and has received a Champions of Change award at The White House for her leadership in coastal citizen science. COASST has received a USFWS partner of the year award for ongoing work in Alaskan coastal communities.

Dr. Helen Spiers

Biomedical Research Lead of the Zooniverse Platform
Department of Astrophysics, University of Oxford

Dr Helen Spiers is Biomedical Research Lead of the Zooniverse, the world's largest and most popular platform for online citizen science. Based in the Department of Astrophysics at the University of Oxford, Dr Spiers researches the phenomenon of citizen science through analyzing meta-data produced by the Zooniverse platform, and spearheads Zooniverse education and outreach efforts in the UK, in addition to managing the development of novel biomedical citizen science projects. Prior to her current role, she completed a PhD in developmental epigenetics at King's College London after obtaining a degree in Biochemistry from the University of Oxford.

Professor Muki Haklay

Professor of Geographical Information Science and co-director of the Extreme Citizen Science group, Department of Geography, UCL

Muki Haklay is a Professor of Geographic Information Science at University College London (UCL). He is the founder and Co-director of the UCL Extreme Citizen Science group. He is recognised as an international expert in participatory mapping, citizen science, usability and Human-Computer Interaction aspects of geospatial technologies, and public access to environmental information. Prof Haklay has been combining the fields of Computer Science and Geography throughout his studies, culminating with a PhD in Geography (2002, UCL) which focused on Public Access to Environmental Information. In 2001 he joined UCL as a lecturer and promoted to a professor in 2011. UCL Extreme Citizen Science group is dedicate to the development of technologies and methodologies to allow any community, regardless of their literacy, to use scientific methods and tools to collect, analyse, interpret and use information about their area and activities. The group has developed a range of technologies that can be used for participatory science and mapping.

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Professor Eileen Scanlon
Open University

Professor Eileen Scanlon is Regius Professor of Open Education and Associate Director of Research and Innovation in the Institute of Educational Technology at the Open University, UK. She is also Honorary Professor in Moray House School of Education, University of Edinburgh. She has extensive research experience on educational technology projects. She is currently involved in research projects that explore aspects of digital scholarship to develop open educational resources; investigate science learning in formal and informal settings concentrating on the development of an inquiry learning pedagogy and citizen science; and develop innovative approaches to evaluation of learning. Professor Scanlon has published extensively in the field of Technology Enhanced Learning and was awarded an OBE in 2016 for her contribution to education.

Festival of Ideas
2nd May 2019, Events Programme

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9:45am
Coffee/Tea (Research Crucible)

10:00 - 10:15am
Welcome & Introduction
Prof Matt Jones, Head of College of Science, and **Prof Alan Dix**, Director of Computational Foundry (Research Crucible)

10:15 - 10:45am
Setting the Scene: New Agendas, Broader Impacts
Professor Jenny Preece, University of Maryland (Lecture Theatre 2)

10:45 - 11:15am
Citizen Science in Swansea and the Gower Peninsular
Professor Geoff Proffitt / or Colleague University of Swansea (Lecture Theatre 2)

11:15 - 11:45am
The COASST Project
Professor Julia K. Parrish, Associate Dean, College of the Environment, University of Washington (Lecture Theatre 2)

11:45 - 12:15pm
The Wisdom of the online crowd - Citizen science with the Zooniverse
Dr. Helen Spiers, Biomedical Research Lead of the Zooniverse Platform Department of Astrophysics, University of Oxford (Lecture Theatre 2)

12:15 - 1:30pm
Lunch

1:30 - 2:30pm
Extreme Citizen Science
Professor Muki Haklay, Professor of Geographical Information Science and co-director of the Extreme Citizen Science group, Department of Geography, UCL

2:30 - 3:00pm
Citizen Science Inquiry: Contemporary Approaches
Professor Eileen Scanlon, Open University (Lecture Theatre 2)

3:00 - 4:00pm
Afternoon tea & Panel Discussion
Speakers and Attendees (Research Crucible/Lecture Theatre 2)

4:00pm
Local field trip led by Geoff Proffitt to Crymlyn Burrows Site of Special Scientific Interest (SSSI)

Festival of Ideas
2nd May 2019, Abstracts

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Jennifer Preece, University of Maryland

Setting the Scene - Citizen Science: New Agendas, Broader Impacts

Citizen Science brings together citizens and scientists who work together to plan projects, collect and analyze data, and communicate their findings to the broader public and to the scientific community. Millions of people from across the world engage in thousands of citizen science projects on a range of topics that include: biodiversity, air and water quality, astronomy, biochemistry, geology, ecology, sustainable agriculture, climate change issues, history, genetics, health, and much more. The aim of these projects is to collect reliable and trusted data that creates measurable and meaningful scientific impacts. After being validated this data can be stored in national and international data bases where it is available to scientists and the public for research. Many citizen science projects also contribute to environmental advocacy, conservation and education.

As the title of this workshop suggests the goal for the day is to identify new agendas for citizen science that have the potential for broad impact nationally and internationally.

Julia K. Parrish, College of the Environment, University of Washington

Hands-on, Place-based Citizen Science: Connecting the Local and the Global

Citizen science is a growing phenomena allowing non-science publics access to data collection, monitoring, and research projects across the spectrum of science. Within projects in which scientific outcomes are the primary objective, hands-on, out-of-doors programs wherein participants repeatedly perform project activities are especially suited for returning high quality data immediately useful in science and resource management while simultaneously provoking the participants' interests and desire to learn about the natural world. The Coastal Observation and Seabird Survey Team (COASST) is a 19 year-old citizen science program with ~800 active participants collecting monthly data on beached birds at ~500 sites from California to Alaska. COASST data have been used to assess the impacts a warming ocean, document harmful algal blooms, and reveal oil spill sensitivity.   COASST participants quickly become highly accurate data collectors who remain in the program for years, take on a science identity, and reveal the "social functions" of science.

Helen Spiers, Biomedical Research Lead of the Zooniverse Platform, Department of Astrophysics, University of Oxford

The Wisdom of the online crowd - Citizen science with the Zooniverse

Technological advances of the 20th and 21st centuries have accelerated the generation of vast volumes of data across many knowledge domains. One innovative approach to effectively process this data is to perform distributed analysis via online citizen science platforms such as the Zooniverse (www.zooniverse.org). Since the inception of this platform in 2007, over 1.7 million volunteers have contributed to more than 150 Zooniverse projects from a broad range of academic domains. This represents a type of crowdsourcing that harnesses the time, enthusiasm and pattern recognition abilities of volunteers to enable data analysis, and thus provides a means of facilitating research that would not be possible otherwise while concurrently engaging the public in authentic research. In this talk, I will give an overview of the past, present and future of research conducted on the Zooniverse platform.

Muki Haklay, Professor of Geographical Information Science and co-director of the Extreme Citizen Science group, Department of Geography, UCL

Extreme Citizen Science technologies: attempting to embed values in code

Extreme Citizen Science (ExCiteS) is a situated, bottom-up practice that takes into account local needs, practices and culture and works with broad networks of people to design and build new devices and knowledge creation processes that can transform the world. The ExCiteS group at UCL was set up to support the implementation of this concept through the development of theories, methodologies, processes, and technologies that allow any community, regardless of (technical) literacy, to engage in citizen science projects that produce results that are meaningful and useful for them. Stemming from theoretical foundations in participatory action research and public participation geographic information systems (PPGIS), our technologies are designed to carry values with them. Once we visit these values, we can see how they turn into code, and ask how successful these efforts are, using cases in the Amazon, Congo-basin, Namibia, UK, and Malta.

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Eileen Scanlon, Open University

Citizen Science Inquiry: contemporary approaches

Citizen science inquiry is a combination of mass participation citizen science and learning to be a scientist through scientific inquiry (Herodotou et al, 2017). At the Open University we have been engaged in research on inquiry learning in science, both in formal and informal settings. We have also developed software to support it. (nQuire and nQuire-it). Interest and involvement in citizen science projects is growing particularly those supported by technology. We have recently developed a web platform in conjunction with the BBC Tomorrows World strand, a development of the nQuire-it platform to allow for scientists, and members of the public to create and run online studies which has increased the scale of missions. This presentation will include an account of our recent studies in this area and our future plans.