1. Summary

The 2nd International Summer School on Social Human-Robot Interaction welcomed PhD students and young researchers for an intensive five days of lectures and workshops covering a wide range of topics in social HRI. It follows up from the 1st Summer School held in 2013 at Christ's College, Cambridge, UK.

This year's summer school was held at Käringsund Resort and Conference site (www.karingsund.ax), Åland, Finland from Monday 24 August to Friday 28 August 2015.

The summer school offered a wide-ranging programme of lectures, discussions and hands-on ateliers on topics such as social signal processing, robotics and autism, child-robot interaction, multi-modal communication, natural language interaction, smart environments, robot assisted therapy, interaction design for robots, tools and technologies, and ethics. The school was aimed at participants who seek a background and hands-on experience in the interdisciplinary science and technology supporting social human-robot interaction.

2. Organising committee

The summer school was organised by Prof Tony Belpaeme (Plymouth University, UK), Prof Serge Thill (University of Skövde, Sweden) and Prof Bram Vanderborght (Vrije Universiteit Brussel, Belgium), together with local organiser Johan Sjölund (Käringsund conference centre).

3. Participants

The summer school welcomed 74 participants, of which 50 were students and 24 were faculty delivering lectures or workshops. The majority of participants came from European institutions and companies. 21 countries were represented at the school, and both genders were well represented (24 female and 26 male participants, 7 female faculty and 17 male faculty). We tried to make this a family friendly event, and three participants brought their family and young children (ranging from 6 weeks to 9 months old).

Figure 1: countries of affiliations of participants

4. Feedback

Although no formal feedback was gathered, the informal feedback received from participants was overwhelmingly positive. Below is a typical comment received from a participant:

“Dear Tony, Serge & Bram,

Thank you for a truly inspiring summer school! I returned to Aalborg full of ideas, new colleagues from distant shores, fresh perspectives on my current research and new ideas for future projects. I also want to thank you for your commitment to assembling a diverse community of scholars. As someone who landed in social HRI studies through a rather circuitous route, I appreciate the open-mindedness and multi-disciplinary community that you fostered. It was a real pleasure to meet you all and to participate in the school.

Cheers,
Elizabeth”

“Dear Bram, Serge, and Tony,

Thank you for organizing such a wonderful, engaging, diverse, and friendly summer school and for inviting me to enjoy it with all of you. Thank you also to all the other speakers, I learned so much from your lectures and our conversations. And your slides will definitely inform my HRI course this semester.

I hope to see you all again!
Selma”

5. Programme

Monday, 24 August

08:00	Breakfast
09:00 – 10.30	The friendly face of robotics (Tony Belpaeme)
10:30 – 11:00	Coffee break
11:00 – 12:30	Experimental HRI: a wander through the challenges (Paul Baxter)
12:30 – 13:30	Lunch break
13:30 – 15:00	Cognitive architectures (David Vernon)
15:00 – 15:30	Coffee break
15:30 – 17:00	Personalising interactions with assistive robots (Yiannis Demiris)
17:00 – end	Poster session and dinner

Tuesday, 25 August

08:00	Breakfast
09:00 – 10.30	Embodied cognition and social interaction (Tom Ziemke)
10:30 – 11:00	Coffee break
11:00 – 12:30	Constructing culture in social robotics (Selma Sabanovic)
12:30 – 13:30	Lunch break
13:30 – 15:00	Machine vision for human-robot interaction (Hui Yu)
15:00 – 15:30	Coffee break
15:30 – 19:00	Workshops Day 1

	1. Building Ono - session 1 2. Programming Nao basic 3. Developing an attention system for a social robot
19:00 – end	Dinner with Hugo Caffaratti: The magic behind the magic

Wednesday, 26 August

08:00	Breakfast
09:00 – 10.30	The Uncanny Valley: what it is, why it matters, and how we might be able to avoid it (Roger Moore)
10:30 – 11:00	Coffee break
11:00 – 12:30	Attentive systems for HRI (Katrin Lohan)
12:30 – 13:30	Lunch break
13:30 – 15:00	Marcel Heerink
15:00 – 15:30	Coffee break
15:30 – 19:00	Workshops Day 2 1. Building Ono - session 2 2. Programming Nao advanced 3. Culturally aware robot design
19:00 – end	Dinner

Thursday, 27August

08:00	Breakfast
09:00 – 10:30	Designing social robots (Bram Vanderborght)
10:30 – 11:00	Coffee break
11:00 – 12:30	Vanessa Evers
12:30 – 13:30	Lunch break
13:30 – 15:00	Human cognition in social HRI (Serge Thill)
15:00	Bus transfer to Mariehamn for public event

Friday, 28 August

08:00	Breakfast
09:00 – 10.30	The Ethics of therapeutic robots for children with autism spectrum conditions (Kathleen Richardson)
10:30 – 11:00	Coffee break
11:00 – 12:30	Socially Intelligent Human-Robot Interaction – applications and needs from an industrial perspective (Amit Pandey)
12:30 – 13:30	Lunch break
13:30 – 17:00	Workshops Day 3 1. Programming Ono 2. Designing HRI experiments 3. Puppetry
17:00 – end	BBQ dinner

Finances

The summer school received sponsorship from IEEE Robotics and Automation Society (20,000 USD), the FP7 DREAM project (approx. 15,000 EUR), Plymouth University (approx. 8,000 EUR) and the FP7 ROBOT-ERA project (5,000 EUR). The shortfall was covered with

registration fees (690€ for a shared room, 810€ for a single room, 540€ for guests in a shared room). We have a small surplus (unknown at time of writing) which will be put towards the organisation of a next edition of the summer school.

6. Photos

These are some photos capturing the summer school. These can be reused for promotional and dissemination material. High-resolution versions of these and other images are available from https://www.dropbox.com/sh/6v6w9eg79otdidr/AACE83_jvKLQA9PqEl3I_nPMa?dl=0

Participants at the 2nd Summer School on Social Human-Robot Interaction, Åland, Finland, 2015.

Lecture abstracts

Tony Belpaeme (Plymouth University, UK)
The friendly face of robotics

Robots that interact with people using one or several communicative modalities have been around for almost 20 years. The technological challenges of creating robust human-robot interaction are huge, and progress in building the artificial intelligence required to make autonomous social robots has been unsteady. But even though the social performance of robots is far from that of humans, the gaps in the robot's social cognition are often plugged by humans' gregarious social cognition. As such we are now at a time where the science and technology of social robots is mature enough to be useful. This talk will give a brief overview of the current state of the art in social robots, and will show how the cognitive sciences are central to building social robots and understanding how our behaviour towards social robots. In a second part, the talk will dwell on the applications of social robots, and will show how they can be used as hospital companions and teachers.

Paul Baxter (Plymouth University, UK)
Experimental HRI: a wander through the challenges

Running HRI experiments is difficult. Running HRI experiments outside of the lab, in the real world, can introduce even more difficulties. Having to deal with real people's quirks and foibles just adds to the challenges! However, there is so much of interest in doing just that: the development of better social robots, and to support the creation of robotic assistants and tools that can help people in their daily lives.
In this talk, an overview will be given of some of the constraints and trade-offs that may be encountered when implementing and running HRI experiments, but also of the opportunities that arise, and effects that can be taken advantage of. Examples from Child-Robot Interaction studies will serve to highlight these, including robots to help children learn, and running experiments in schools and hospitals.
Some of these issues may already be familiar or be intuitive, and will certainly be non-exhaustive, but the intention is to outline the basis of a toolkit of experimental HRI considerations that can be thrown at any attempts to release experiments into 'the wild'.

Hugo Caffaratti (University of Leicester, UK)
The magic behind the magic

It would have been difficult to guess, a few years ago, that one of the Ancient Arts – Illusionism, designed primarily to entertain – could one day become an important research tool in the fields of both psychology and cognitive neuroscience. Yet distinguished neuroscientists around the world are beginning to study and practice the art of (legitimate) deception, controlled confusion, and (mis)directed attention, with the goal of designing new and sophisticated paradigms that help them decode cognitive mechanisms such as attention, memory, conscious visual perception and decision-making.
For thousands of years, using trial and error, Magic has been compiling an ‘instruction manual’ on how to hack the human brain, based on the evidence of seemingly impossible facts. This knowledge constitutes a vital body of material for cognitive neuroscience. In this sense, each trick, in all its parts, is an experiment in itself, and can be adapted to laboratory conditions.
As a result, scientists and illusionists have been able to understand the importance of sharing both experience and knowledge, prompting them to embark on a common project known as the ‘Neuroscience of Magic’. This term indicates a new scientific discipline, one

that attempts to shed light on neurocognitive investigation using innovative paradigms based on the Ancient Art, which have, until now, remained incomprehensible to the scientific community.
And who knows, perhaps illusionism's greatest trick of all will be to help us better know and understand the human brain.

Yiannis Demiris (Imperial College London, UK)
Personalising interactions with assistive robotics

Robots are increasingly establishing their credibility as useful assistants outside traditional industrial environments, with new challenges emerging for intelligent robotics research. To personalise the interaction with human users, robots need to learn life-long user models that can be used to recognise human actions, predict human intentions and assist intelligently, while constantly adapting to changing human profiles. In this lecture, I will describe our latest research in adaptive embodied cognitive architectures that combine action perception, social cognition and machine learning mechanisms for humanoid robots and smart robotic wheelchairs. I will describe their application towards adaptive robotic assistants for children and adults with lifelong illnesses and disabilities.

Katrin Lohan (Heriot-Watt University, UK)
Attentive systems for HRI

One of the key problems in HRI is to create a natural interaction with humans. To achieve this, a focus point of communication is necessary between the robot and the user(s). Also, the robot should be able to select the focus point. I will present multiple bio-inspired and developmental approaches to select the focus of attention for a robotic system. The presented approaches are based on visual and audio input. Next, I show the impact a feedback strategy based on these approaches has on a human robot interaction. Furthermore, I will discuss shared gaze/diadic/triadic joint attention mechanisms and will present work on saliency systems and anticipatory gaze.

Roger Moore (University of Sheffield, UK)
The Uncanny Valley: what it is, why it matters, and how we might be able to avoid it

The term 'uncanny valley' was coined by Masahiro Mori in 1970 to describe the observation that near-human artefacts (such as a prosthetic hand) can trigger feelings of eeriness and repulsion in the viewer. A classic example is 'Polar Express', the 2004 animated feature film starring Tom Hanks, in which several of the characters (whose movements were derived using motion capture) come across to some observers as strange and uncanny. In science and engineering the uncanny valley has become of increasing relevance to character animation in computer games and to the appearance and behaviour of humanoid robots (such as Geminoid F) where the agents are sometimes perceived as being weird or creepy. Of course the uncanny valley has been the subject of a number of scientific investigations. However, while some studies confirm its existence, others don't find any evidence for it at all! Also, although a number of qualitative theories about the effect have been published, there has been no quantitative model capable of explaining these diverse results until very recently. In 2012, Prof. Moore published a paper in Nature - http://www.nature.com/srep/2012/121115/srep00864/full/srep00864.html - which provided the first mathematical explanation of the uncanny valley effect. Moore's approach (based on a Bayesian model of categorical perception) showed how differential distortion caused by

stimuli containing conflicting perceptual cues can give rise to tension in the region of a category boundary. The model also revealed how different observers could have different responses to the same stimuli. This lecture will review the uncanny valley phenomenon, discuss the competing theories (with a special focus on Moore's mathematical model), and will conclude with some suggestions as to how the uncanny valley might be avoided in the design of future robots and autonomous agents.

Amit Kumar Pandey (Aldebaran Robotics, France)
Socially Intelligent Human-Robot Interaction - applications and needs from an industrial perspective

Abstract: With significant advancements in robotics, now the robots are beginning to coexist and work with us, to assist and accompany us, and to interact, play, learn and teach. Time has arrived, when social robots are getting deployed or available for practical purposes in homes, stores, and public places. E.g., Pepper robot of Aldebaran SoftBank group is planned for mass production for homes and stores in Japan, Nao robots are already being used for R&D in social interaction all across the world, and the Romeo2 project is focusing on development and evaluation of humanoid companion robot Romeo for everyday life, etc. However diverse the application might be, the common requirement is that such robots, beyond their short term engaging effect due to novelty, should actually be able to establish long term social relations with human and with individuals, by behaving in socially expected and accepted manners. For this, the Social Intelligence, being the underlying engine for reasoning, play crucial role, which should be supported by the mechanism of social learning, to close the loop of social interaction and learning in long term. There are also crucial from commercial and industrial perspective of exploitation of social robots. The talk will emphasize on these aspects, highlight some of the R&D challenges and needs from industrial perspective, and point to some of the applications, targeted scenario and use cases, which need to be addressed by the community, and expected to provide the hot topics for the young researchers.

Kathleen Richardson (De Montfort University, UK)
The Ethics of Therapeutic Robots for Children with Autism Spectrum Conditions

The use of robots as therapeutic tools for helping children with autism is an important growth area in robotics. Robots as 'intermediaries' or as 'robot-enhanced' devices are reshaping what it means to understand autism and how to help support those with the condition. This talk will explore the ways in which robotic science and psychiatry meet around the issue of autism. When therapy and robotics meet what are the kind of ethical issues are raised? What are the drawbacks and potentialities of such collaborations? The use of robots for children with autism speaks direct to the issue of what does it mean to be 'social' and the importance of sociality for what it means to be human. Can robotics machines become 'social'? And how do researchers take into account important voices in the autism advocacy movement and disability and difference narratives.

Selma Šabanović (Indiana University, USA)
Constructing Culture in Social Robotics

With the proliferation of the development and use of robots in various cultural contexts, questions about the effects of culture on robot design, perception, and use have become increasingly relevant to the scientific study and economic development of robotics. The study of culture has a long history in the social sciences and humanities, including anthropology, sociology, psychology, and more recently media and cultural studies. Social studies of technology have also explored the role of culture in the design, adoption and use of

technology, and the influence of technology in cultural development and reproduction. This lecture will introduce the concept of culture and different methods for studying it that have been developed in the social sciences, and describe how such concepts can be applied to the design and study of social robotics and human-robot interaction through examples of research in the area. Specific topics will include how culturally variable conceptions of sociality, cognition, and interaction are implicitly and explicitly incorporated into the design socially interactive robots; how culturally variable perceptions and expectations of robotic technology can be identified among potential users of robots; and how we can incorporate the study of culture and technology into robot design through collaboration with users. We will close with a reflection on the design and implementation of robots in society as a process of ongoing development of cultural meanings and practices.

Serge Thill (University of Skövde, Sweden)
Human cognition in social HRI

A large part of human cognitive abilities is dedicated to interaction with other humans. Research in social cognition addresses how we go about such interactions. Theory of mind, in particular, seeks to explain how we infer the intentions of other people, or the outcome of our own actions in social situations.
In this lecture, we cover aspects of human cognition such as the above with a particular focus on implications for social human-robot interaction: how might humans interact with robots and other artificial agents? How do humans infer the intentions of such agents (and vice versa)? What implications are there for robot design if we see them as social partners rather than tools?

Bram Vanderborght (Vrije Universiteit Brussel, Belgium)
Designing social robots

Social robots are designed to focus on verbal and non-verbal communication and are build to act as a social interface by employing human-like social cues and communication modalities. During the talk the different (mechatronics) design aspects of such a social robot will be discussed: the size, the appearance, the degrees of freedom to express gestures, attention and emotions, the actuation concepts (e.g. compliant actuation to guarantee a safe and soft physical interaction between the robot and the children), the sensors, the fabrication technologies and the motion control system. Several examples will be given using the robot Nao, Probo and Ono where HRI experiments are performed with autistic children: to test whether typically developed children are able to recognize the emotions of the robot; as a social story telling agent for improving social skills in ASD children; to support children to recognize basic emotions; imitation skills; joint attention skills and to mediate social play skills of children with ASD with their sibling.

David Vernon (University of Skövde, Sweden)
Cognitive Architectures

After a brief introduction to artificial cognitive systems and the cognitivist, emergent, and hybrid paradigms of cognitive science, this lecture will address the nature and role of cognitive architectures in robotics. We will discuss the desirable attributes of a cognitive architecture and we will review a representative selection of cognitive architectures from

each paradigm, highlighting the elements of an architecture that are particularly important for social human-robot interaction.

Hui Yu (University of Portsmouth, UK)
Machine vision for human-robot interaction

Human-Robot Interaction has made considerable progress in recent years due in part to the wide range of potential applications and new developments in computing technology, both in software and hardware. Human-Robot Interaction, as the name suggests, is focused in situations in which people are central. For decades computer scientists have been working on imbuing machines with the power to perceive and interpret the world as we do. This lecture will give a quick overview of what machine vision is and an introduction to the most used algorithms in machine vision relating to image acquisition, multi-channel image processing, feature matching, segmentation, object detection/recognition, and image interpretation/understanding. The lecture will also discuss the application of machine vision in HRI. Specifically, we will discus depth sensors and their applications, including functionality, programming and a comparison of the most popular depth sensors and their practical applications.

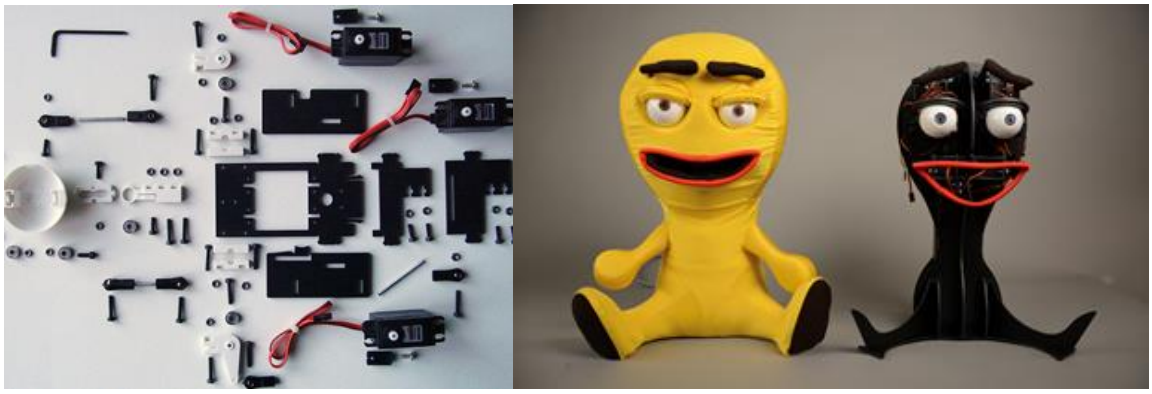
Tom Ziemke (University of Linköping/University of Skövde, Sweden)
Embodied cognition and social interaction

The lecture discusses the concept of embodiment in cognitive science and AI research, with a focus on the role of the body in emotional and social interactions.

Workshop abstracts

The programme is available online as well, with URL actually working when you click them.

Building the Ono robot (Session 1 and 2)
Jelle Saldien and Cesar Vandevelde (University of Ghent)



This is a workshop (2 half-day sessions) in which you will receive insights in the design and construction process of social robots and DIY robotics in general. During the workshop you will build your own social robot following the instructions given by the tutors. While building the robot, insights will be gained how to adapt the design to personal needs.

Session 1

- Introduction of the Industrial Design Center and its design methodology on intelligent products and social robots [15m]
- Overview on the design and construction steps of the Ono robot platform [30m]
- Assembling the modules (2x eyes, 2x eyebrow, 1x mouth) [60m]
- Assembling the frame = the skeleton of the robot and integrate the electronics [40m]
- Add speakers for sound [20m]
- Solder and wire the power supply [30m]

Session 2

- Integrate the modules and connect the cables with the main processing shield and the Raspberry Pi [30m]
- Test run the software and make Ono come alive [30-80m]
- Attaching and closing the outer foam layer [20m]
- Attaching the final textile skin with the actuated parts [20m]

EXTRA 1: Adding additional interaction modalities using capacitive sensing and/or MakeyMakey technology [20-60m]

EXTRA 2: Adding additional I/O features that you brought yourself [20-60m]

Prerequisites and preparation

This workshop consists of 2 sessions; **it is not possible to only follow only one session.** It is highly recommended to also follow session 3 in which you will learn to program your robot. This workshop does not require prior knowledge, however basic technical skills can be useful. A laptop is needed to access online manuals and connect with the robot to do the setup and test run.

EXTRA: Additional input/output can be added to the Ono platform, enthusiast participants are encouraged to bring extra features (e.g. Neopixels, buttons, flexsensor, FSRsensor, IRsensor, …). I/O can be connected via the Ono shield with: 4 analog inputs, I2C bus, NEOPixel bus output, USB Ports (e.g. arduino via Serial COM).

Nao programming I: Get familiar with Nao

Pablo Gomez Esteban (Vrije Universiteit Brussel) and Long Cao (Vrije Universiteit Brussel)

Within this workshop you will learn the first steps to program a Nao robot using Aldebaran's specific framework Choregraphe. The workshop will be oriented to those participants which have no prior programming experience. Choregraphe is graphical programming tool which allows you to easily code some behaviors within some minutes. It is also a good tool to get familiar with basic programming concepts. This workshop may be complemented with the Nao programming II: Get social with Nao workshop.

From a face in a video to the estimation of the focus of attention

Séverin Lemaignan (Ecole Polytechnique Fédérale de Lausanne/Plymouth University)

Assessing in real-time the focus of attention of a human interacting with a robot is essential to understand implicit references in a dialogue ("robot, take that!"), to measure engagement (is the human "with me"?) or to detect outright problems (why is this human staring at me since 20 minutes?)
With a regular camera, a bit of math and a good face detector, we can actually estimate pretty accurately and in real-time the 3D head pose of surrounding humans. Combined with some frames' magic, this lets us assess what the human is looking at.
During the workshop, we will:

- use a state-of-art open-source face detector (coming for the dlib library) and a PnP algorithm (from OpenCV) to match a 3D template of a head onto a 2D camera stream,
- export the head pose as a ROS tf frame and see you face in RViz,
- write a dedicated ROS node that computes what is seen by the human at a given time,
- test the system in a pre-recorded scenario,
- (and if you are fast enough,) validate the approach by manually annotating the focus of attention and computing an inter-judge agreement between the robot and you.

The workshop is going to be dense, prepare the Red Bull!

Prerequisites

Since the workshop is packed, please make sure that the following prerequisites are met *beforehand*.

- The workshop will use C++ and Python. You need to have a working knowledge of both.
- I will assume a working installation of ROS (Indigo or Jade) and some basic knowledge of it (including topics, RViz and tf). Typically, you should be comfortable with the material covered in the “Introduction to tf” tutorial (http://wiki.ros.org/tf/Tutorials/Introduction%20to%20tf),
- Please download dlib (http://dlib.net/) and make sure that the face detection example compiles and works (-> dlib/example/face_landmark_detection_ex.cpp),
- Make sure OpenCV 2.4 is installed and working (this should have come with ROS anyway). If you have never used OpenCV before, I recommend you to have a look to some of its tutorials:
- http://docs.opencv.org/doc/tutorials/tutorials.html,
- Optionally, calibrate your webcam beforehand with the OpenCV calibration tool. This is not mandatory, but will allow a better accuracy.

Culturally aware robot design
Selma Šabanović (Indiana University)

This hands-on design activity is aimed at exploring how to incorporate cultural awareness into social robot design, as an example of a participatory design activity that can be performed with potential users of social robots. Participants will work in small groups to develop a robot design concept for a specific everyday space (e.g. home, school, office). They will first explore the cultural values of the space through their own experiences in it and knowledge of other potential users -- what are common daily practices in the space, who are the inhabitants and what kinds of roles do they have, what are their goals, values, and needs, etc.? Participants will then discuss how social robotics might be incorporated in the space in culturally appropriate ways – what kind of tasks can they perform, what will their role and relationship to users be, what should they look like and how should they behave? This process will include the production of a paper/cardboard based robotic prototype and design scenarios in which the robots will be used. In the following section of the workshop, the small groups will present their robot concepts and use scenarios to the larger group and explain the cultural logic and intended social benefits of the design. As a larger group, we will then discuss the cultural possibilities and limitations of the designs, the potential and consequences of using it in other cultural contexts, and how the designs might be amended for us in multiple cultural contexts. This activity will allow us to look at both cultural particularities and universal characteristics of robot designs and use contexts. It also will show how we can run participatory design activities with users as a way of exploring the cultural aspects of robot design.

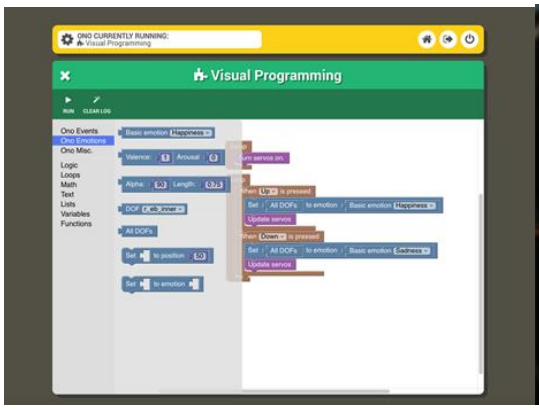
Nao programming II: Get social with Nao!
Erik Billing (University of Skövde), Paul Baxter (Plymouth University)

In this workshop you will get into some real robot interaction. As a participant of the workshop, you will develop an interaction scenario where both humans and the Nao take part, and decide how the robot should act in a particular situation. We will look specifically on the following two scenarios, you are also welcome to suggest your own:
Companion Nao I: Tactile Buddy

Tactile communication is important for humans, especially for children. In this scenario we look at how a robot should react to touch, and how this is perceived by humans. How can a robot differentiate between a friendly pet or an aggressive push, and should it?
You are to use the existing programming components for the Nao robot to get some tactile interaction going. Think about what HRI aspects come in to play, and how open questions could be investigated in longer term.

Companion Nao II: Desktop Buddy
Could the Nao robot be a modern form of the old time butler delivering your mail? It could certainly do some!
Nao will here connect to your email and inform you about incoming messages. But what exactly is the best way for a robot to call your attention. Should it read the email out loud, or simply make a fine gesture with the arm? Motivate your choice of action from an HRI perspective, and implement it to see how it works!

Programming the Ono robot
Jelle Saldien and Cesar Vandevelde (University of Ghent)



In this workshop you will learn about programming interactions with social robots and DIY robotics in general. During the workshop you will learn to control your own social robot following the instructions given by the tutors. After the basic setups and test scenarios, you are challenged to program your own interactions with the robot.

- Introduction to the Ono software platform and the different applications [30m]
- Design an interactive scenario for your Ono robot [30m]
- Implementation and debugging of the scenario on the robot [100m]
- Presentation, taking movies and pictures with your robot [20m]

Preparation and prerequisites
It is highly recommended to take first session 1 and 2 to build your own Ono robot that can be programmed in this session. This workshop does not require prior knowledge, however some basic programming skills can be useful. A laptop is needed to connect with the robot to do the setup and programming.
EXTRA : It is recommended to think about specific interactions and scenarios you would like to see that can be useful for your own HRI research.

Take into account the following features for Ono:
- Facial expressions

- Sound (playing wav/mp3 files or English text to speech)
- Web interface for WOZ setups
- Capacitive sensing (for touch sensing different parts of the robot)
- Additional motors can be used to create extra motions

Using social robots for psychological interventions
Cristina Costescu, Andreea Peca (Babes-Bolyai University) and Ramona Simut (Vrije Universiteit Brussel)

Robopsychology is a field that investigates a. how social robots could be used in psychological interventions (e.g., clinical psychology, evidence-based therapy) and b. how psychological science can influence both the construction of robots and human-robot interactions (Libin & Libin, 2004; David, Matu & David, 2014). The purpose of this workshop is to illustrate how robots can be used in psychotherapy, as tools for developing and testing applications for a specific neurodevelopmental disorder: autism spectrum disorder (ASD). During the workshop we will present several robotic applications developed for children with ASD and how this applications were tested for improving different abilities, such as: joint attention, imitation, play skills, etc. Important issues from robot-child interactions will be discussed, such as the rationale of using robots for children with ASD; roles of the robot in a psychotherapy session and limitations of existing approaches and future directions for studies. There will be also a hands-on part of the workshop where we will work together on coding some behaviors of children with ASD from a session of child – robot interaction. Participants will be provided a detailed description of the behaviors that they have to observe (e.g. imitation performance, eye contact, etc.), and then they will receive mini-training on how to use ELAN 4.9.1 The Language Archive; the program that they will have use for coding. After working in groups and coding the behaviors observed in the robot-child session we will discuss together the results. In the last part of the workshop, a model of ASD based on early impairments in processing biological motion will be presented. This body of research sheds light on the importance of biological motion in intentionality perception and suggests that developing biological motion in robots should be an important future research direction in social robotics.

Prerequisites

Before attending the workshop, participants have to install ELAN 4.9.1 The Language Archive. They could install it from the following link: https://tla.mpi.nl/tools/tla-tools/elan/download/

Puppetry workshop: puppetry and human-robot interaction
Staci and Jonathan Hodge (Furrifingers, UK)

Puppeteers and roboticists have a lot in common: both try to bring inanimate matter to life and while doing so, have to work around the constraints of the puppets or robots. If successful, an audience believes the puppets or robots to be lifelike and believable. Puppeteers have been working on their craft for thousands of years, and in this workshop you will learn more about how puppeteers build puppets and how they bring them to life.