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Deliverable D8.3:

2nd Report on dissemination activities and Final Plan for the Dissemination of Knowledge

January 31st, 2015

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Contents

Summary

On the verge of successful completion of three years of the project, RoboHow has received tremendous recognitions within the scientific community, and in industrial events, media and public. The third year has also witnessed the grand launch of the Romeo robot, one of the robots of RoboHow, the awarding of Ph.D. degrees with honors and the recognition of RoboHow open-source software by Google Summer Code 2014. Continuing the legacy of the project, a large number of reputed journal and conference publications, invited talks and keynote speeches, further elevated the awareness in the scientific community about RoboHow project. Whereas, our participations in industrial exhibitions and robotics events, and widespread media coverage helped building the general public awareness about the core idea behind the projects, and its achievements and applications. In parallel, the web infrastructure for internal communication and for public awareness has been maintained and kept lively, with the project reports, activities, achievements, results and publications. In the third year, we also used some non-conventional means to build long lasting impression of the RoboHow project and its robots by distributing customized RoboHow mugs and greeting cards.

In its third year RoboHow has already achieved joint and multi-partner based activities and publications. In its final year, we aim for more joint activities, in terms of integration based publication and events. Further, the dissemination will become even more interesting with new workshops, papers and already planned events, featuring some interesting demonstrations resulting from various planned integrations.

Chapter 1

Report on dissemination activities

1.1 Dissemination material and project website

We kept the web-based infrastructure set up for internal and external communication of the RoboHow project (described in Deliverable D8.1) alive and informative with up-to-date content. As mentioned in Deliverable D8.1, this infrastructure has public and private parts. Public web site presents the project to the scientific community, the public and the press. The private part containing a private wiki, a web-based project management and issue tracking software, a video conferencing server, and several mailing lists, facilitates internal communication. As appropriate, the photos of the RoboHow robots, the information flyer, a poster, the deliverables and the published articles are also made available for download.

1.2 Dissemination to the scientific community

In the third year, continuing the legacy of the previous years, the project consortium had strong dissemination to the scientific community. This is evident by a large number of publications, award of Ph.D. degrees with honors, prize nominations, involvements in workshops and invitation for talks.

1.2.1 Achievements, prizes and awards

- Finalist for the Best Paper Award of the IEEE T-ASE Journal (UNIHB) [1]
- Awarded Ph.D. degree with honors. Iason Oikonomidis, January 12, 2014 (FORTH)
- Awarded Ph.D. degree with honors. Nikolaos Kyriazis, June 13, 2014 (FORTH)
- The Institute for Artificial Intelligence (IAI), University of Bremen (UniHB) has been selected as mentor organization for the Google Summer of Code 2014. The selection process is highly competitive in nature and the selection itself acknowledges the important of real use of the open-source software of the RoboHow project.

[1] Moritz Tenorth, Alexander Clifford Perzylo, Reinhard Lafrenz, Michael Beetz, "Representation and Exchange of Knowledge about Actions, Objects, and Environments in the RoboEarth Framework", In IEEE Transactions on Automation Science and Engineering (T-ASE), vol. 10, no. 3, pp. 643-651, 2013.

1.2.2 Organized conference workshops

- **Tracking for Human Activity Monitoring**, special track in conjunction with the International Symposium on Visual Computing (ISVC 2014[2]) (Co-organized by Argyros Antonis (FORTH) with Savakis Andreas (Rochester Institute of Technology) and Asari Vijay (University of Dayton))
- **International workshop on Autonomous Grasping and Manipulation: An Open Challenge**[3], full-day workshop at ICRA 2014. (Co-organized by Danica Kragic (KTH) with Renaud Detry (University of Liege) and Oliver Kroemer (Technische Universitaet Darmstadt))
- **Real-time Motion Generation & Control Constraint-based Robot Programming**[4], full-day workshop at IROS 2014. (Co-organized by Gianni Borghesan (KUL) with Torsten Kroeger (Stanford University) and Andrea Maria Zanchettin (Politecnico di Milano))
- **Optimization techniques for motion generation in robotics**[5], full day workshop at RSS 2014. (Co-organized by Adrien Escande (CNRS/AIST Joint Robotics Laboratory) with Katja Mombaur (University of Heidelberg))
- **Redundancy, inequalities, and the mathematical tools to address them**[6], full day workshop at IEEE/RAS Humanoid 2014. (Co-organized by Adrien Escande (CNRS/AIST Joint Robotics Laboratory) with Fabrizio Flacco (Università di Roma "La Sapienza"), Nicolas Mansard (LAAS-CNRS) and Ludovic Righetti (Max-Planck Institute for Intelligent Systems))

1.2.3 Invited plenary talks

- Antonis Argyros (FORTH), "Tracking hands and hand-object interactions", Athena Research Center, Athens, Greece, June 17, 2014.
- Antonis Argyros (FORTH) "Tracking hands and hand-object interactions", BMVA meeting on Vision for Language and Manipulation, London, UK, July 11, 2014.
- Aude Billard (EPFL), "Fast Reactivity in the Face of Perturbations", Workshop on Guaranteed Safety for Uncertain Robotic Systems, Robotics Science and System Conference (RSS 2014), Berkeley, July 2014.
- Aude Billard (EPFL), talk at Workshop on Human-Robot Collaboration for Industrial Manufacturing, Robotics Science and System Conference (RSS 2014), Berkeley, July 2014.
- Bernhard Hommel (UL), Talk at Nacht van Kunst en Kennis [Night of Art and Science], Leiden, September 20, 2014.
- Iason Oikonomidis (FORTH), "Efficient Tracking of the 3D Articulated Motion of Human Hands", Autonomous Motion Department, Max-Planck-Institute for Intelligent Systems, Tübingen, Germany, 26 November 2014.
- Nikolaos Kyriazis (FORTH), "A computational framework for observing and understanding the interaction of humans with objects of their environment", Autonomous Motion Department, Max-Planck-Institute for Intelligent Systems, Tübingen, Germany, 26 November. 2014.

[2] http://www.isvc.net/
[3] http://grasping-challenge.org/
[4] http://cs.stanford.edu/people/tkr/iros2014/index.html
[5] http://www.orb.uni-hd.de/conferences-workshops/RSS2014
[6] http://www-amd.is.tuebingen.mpg.de/ righetti/humanoids2014_WS/

- Rodolphe Gelin (ALDEBARAN), presentation of "the ethical and societal challenges of humanoid as companion robot", International Conference on Going Beyond the Laboratory - Ethical and Societal Challenges for Robotics, Hanse-Wissenschaftskolleg, Delmenhorst, 13-15 February 2014.
- Rodolphe Gelin (ALDEBARAN), "Humanoid robots for autonomy of elderly people", 9th World Conference of Gerontechnology (ISG 2014), Taipei, Taiwan, 20 June 2014.
- Abderrahmane Kheddar (CNRS), "Omnitask humanoid robots", The 11th International Conference on Ubiquitous Robots and Ambiant Intelligence (URAI), Kuala Lumpur, Malaysia, 12-15 November 2014.
- Abderrahmane Kheddar (CNRS), "Advanced haptic interaction skills for humanoid robots", French-German-Japanese Conference on Humanoid and Legged Robots (HLR), Heidelberg, Germany, 12-15 May 2014.

1.2.4 Contributions to summer/winter schools

- Organization of a week long summer school, *European PhD School in Robotic Systems*. RoboHow was one of the discussed examples. A total of 11 PhD students and PostDocs participated. (KUL)
- Lecture on "*AI and Robotics: the Industrial Perspective*" at the Lucia Winter School on "*AI and Robotics 2014*", Örebro, Sweden[7] , Dec. 2014. (Amit Kumar Pandey (ALDEBARAN))
- Lecture on "*The openEASE, which is an open knowledge server*" at the Lucia Winter School on "*AI and Robotics 2014*", Örebro, Sweden[7], Dec. 2014. (Michael Beetz (UNIHB))

1.2.5 Project publications

The list of project publications for Year 3 can be found in Chapter 3.

[7] http://aass.oru.se/Agora/Lucia2014/program.html

1.3 Dissemination to the industry

- A two page coverage about the Roemo robot, its design (including the hand, see Figure 1.1) has been published in ***Industrie and Technologies*** magazine, October 2014. Title: "Une Mise à nu Sous le capot de Romeo".

Figure 1.1: Industrie and Technologies magazine coverage of the Romeo robot and its hand technology.

- *Rolex* visit to EPFL, 5 September 2014. Talk: Task parametrization using constraints extracted from human demonstration, EPFL, September 2014.
- FORTH presented its hand tracking research results to *Khymeia*[8], an Italian company active in the field of medical rehabilitation of patients with strokes, and had discussions on the exploitation of RoboHow hand tracking results in the context of the *Khymeia* applications.

[8] http://www.khymeia.com/

1.4 Dissemination to the future users and general public

In addition of creating strong impression within the scientific community, RoboHow consortium has been of great success in raising the public awareness and advertisement of the project and the robots, through media and demonstrations[9].
The Romeo robot, one of the robotic platform of RoboHow, has been launched at Innorobo 2014, Lyon. In terms of figures, the launch of Romeo appeared in more than 30 national and international media reports and blogs, such as *Le Figaro*, *Clubic*, *Netronews*, *News BBC*, *Theory of life*, *IEEE Spectrum*, to name a few. This has also contributed in the overall attention from the media about RoboHow related activities.

1.4.1 Media coverage

Highlights of newspaper coverage

- An article appeared in *Gazet van Antwerpen*, 21/10/2014, Figure 1.2. Title of the article is "*onderzoekscentrum Flanders' Make maakt once bedrijven concurrentieel*", and presents a new research effort in the Flanders region.

Onderzoekscentrum Flanders' Make maakt onze bedrijven concurrentiëler

In Lommel is gisteren het startschot gegeven van Flanders' Make, het nieuwe strategisch onderzoekscentrum voor de maakindustrie. Daarin bundelen Vlaamse onderzoekscentra, universiteiten en bedrijven hun krachten om de Vlaamse maakindustrie concurrentiëler te maken.

• "Met 200.000 medewerkers in 5700 bedrijven is de maakindustrie de motor van de Vlaamse economie. Temeer omdat deze bedrijven goed zijn voor 80 procent van onze export en voor 80 procent van de middelen voor onderzoek en ontwikkeling", zegt Urbain Vandeurzen, voorzitter van de raad van bestuur van Flanders' Make. "Om toekomst te

FLANDERS MAKE

Voorzitter Urbain Vandeurzen en directeur Dirk Torfs (l) gaven gisteren in Lommel het officiële startschot van Flanders' Make. Ze staan hier bij een 20-motorige robot die in bedrijven werknemers kan assisteren bij het verplaatsen van te zware voorwerpen. FOTO DICK DEMEY

Technology (mechatronische industrie in Leuven) en de vijf Vlaamse universiteiten hun krachten. Samen met grote

vier jaar zal het centrum 300 voltijdse onderzoekers tellen.

Figure 1.2: An article appeared in *Gazet van Antwerpen* presenting FLANDERS MAKE, showing one of the demo designed within the RoboHow project.

- An interview of Rodolphe Gelin, with dedicated coverage about the Romeo robot has been published in *Le Figaro*, 24/11/2014, Figure 1.3). It is one of the oldest and largest circulated national newspaper in France. Title: "*Moi, Romeo, androïde en quête d'amour*".
- An article about the Romeo robot was published in *Le Parisien*, 17/11/2014, another largest circulated national newspaper in France. Some of the other newspapers, which featured Romeo are *Phosphore*, France, page 42, 1/12/2014; *La tribune*, France, page 10-11, 7/11/2014; *Paris Match*, France, pages 85-86, 31/07/2014.

[9] An up-to-date report on the media coverage on RoboHow can be found on the website: `https://robohow.eu/media/coverage`.

lundi 24 novembre 2014 LE FIGARO

38 HIGH-TECH

Moi, Romeo, androïde en quête d'amour

DIDIER SANZ @sanzdidier

FUTUR

Dans ses locaux d'Issy-les-Moulineaux, la société Aldebaran prépare le robot compagnon qui s'invitera demain à la maison. Visite guidée.

C'est un vaste atelier meublé d'établis sur lesquels s'entrecroisent des cartes électroniques, des oscilloscopes et des assemblages de pièces métalliques. Dans un coin, suspendu à une armature, un robot somnolle. C'est Romeo, dernier-né des ingénieurs d'Aldebaran Robotics, la société qui a déjà produit le petit androïde Nao et la cyber-bêtasse Pepper. Grand (1,40 mètre), capable de marcher, de saisir des objets et de reconnaître des visages, Romeo n'est encore qu'un prototype. Or, plus exactement, un concept comparable aux concept cars des constructeurs automobiles, destiné à étudier de nouvelles technologies et de nouveaux usages. « Il nous sert d'abord à tester divers matériaux, mais aussi des programmes et des mécanismes qui servent déclinés sur Nao et Pepper », explique Rodolphe Gelin, directeur de la recherche d'Aldebaran. Romeo incline la tête et interlocuteur. Après un simple regard, il suive la personne. « Bonjour monsieur », « Bonjour madame », « Bonjour mademoiselle » ou « Bonjour petit enfant » – et annonce : « Je pense que vous avez à mettre au point des outils de programmation qui éliminent la majorité des risques d'erreur et de bugs. » Il faut aussi rendre le robot sympathique. Son allure de personnage de bande dessinée, sa silhouette galbée et ses gestes naturels constituent une première étape, même si l'apparence de Romeo n'est pas encore définitive. Une chose est sûre : il doit garder un aspect humain pour s'intégrer plus facilement dans le monde des humains. « Les gens ont moins de réticence à parler à un robot humanoïde qu'à un appareil électronique », constate son concepteur. En s'improvisant confident, le robot peut même contribuer à recréer un lien social : « En comparant les informations que lui donnent différentes personnes âgées dans une maison de retraite, sur un film ou sur une émission de télévision par exemple, Romeo peut les encourager à se rencontrer. » Une idée née de l'expérience de Nao auprès d'enfants autistes. Deux

Conçu pour le développement de nouvelles technologies et applications, Romeo préfigure le robot domestique de demain.

Figure 1.3: Interview of Rodolphe Gelin on dedicated coverage of Romeo robot platform of RoboHow project in the Le Figaro, the national newspaper of France.

- An interview of Amit Kumar Pandey, published in *Prabhat Khabar* newspaper, India, 22/09/2014, Pages 1 and 17, about roles of robots for society and also talks about the RoboHow project.
- A coverage on cognitive robotics in *Leidsch Dagblad*, a Dutch newspaper, January 15, 2015.
- An in-depth article about introductory workshop for high-school students (part of RoboHow dissemination), was published by the *Weser Kurier*, a daily newspaper of Bremen.

Highlights of television coverage

- The launch of Romeo has been featured in *Culture Geek* series of *BFM TV*, see Figure 1.4

Figure 1.4: The launch of the Romeo robot featured in *BFM TV Culture Geek* series.

- The Romeo robot has been featured in Documentary "*La vie rêvée de Gaspard - Vivre mieux et*" of *FRANCE 5*, broadcast on 19/12/2014 at 22:07.
- Coverage about the Romeo robot in *France 3* news channel, during the reporting "*La cité des Congrès et son exposition*" of *Uthopiales*, Nantes, on 31/10/2014 at 19:06.

- RoboHow is mentioned and briefly described in the "*robots invading the student restaurant*" video published on YouTube[10] and will be aired by the Belgian TV station *Canvas* in March 2015.

Highlights of online news and blog coverage

- The launch of the Romeo robot was also echoed internationally. For example, featured by the *New York Post*, March 18, 2014, "*Stunning artificial intelligence at the 2014 InnoRobo Summit*", Figure 1.5.

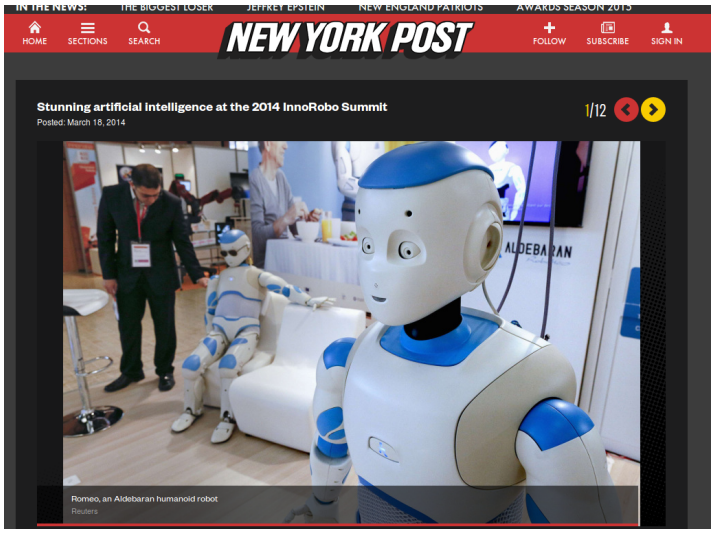

Figure 1.5: The launch of Romeo in Innorobo, Lyon, France, featured in New York Post, March 18, 2014.

- The launch of Romeo appeared in *Rude Baguette* [11] blog, "*'Romeo' makes his big debut at Lyon robotics fair Innorobo*".
- The launch of Romeo also appeared in many other blogs such as *IEEE Spectrum*[12], *Robot Dreams*[13], *Theory of Life*, etc.

Highlights of radio coverage

- Radio coverage of RoboHow and the role of robots in society on Dutch national radio station *Q-Music*, on January 16, 2015.
- Radio interview about household robots on local Leiden radio station *Unity FM*, on January 16, 2015.

[10] http://youtu.be/owRgR2QImek
[11] http://www.rudebaguette.com/2014/03/19/romeo-makes-big-debut-lyon-robotics-fair-innorobo/
[12] http://spectrum.ieee.org/automaton/robotics/humanoids/aldebaran-robotics-introduces-romeo-finally
[13] http://www.robots-dreams.com/2012/03/aldebaran-nao-and-romeo-humanoid-robots-on-french-tv-video.html

1.4.2 Demonstrations and exhibitions in public events

- The Romeo robot was launched and exhibited at Innorobo 2014, Lyon, France. Innorobo[14] is the leading international events and exhibition of Robotics in Europe.
- Romeo was presented during International Festival of Science Fiction, 29 October to 03 November 2014, at La Cité, Le Centre des Congrès of Nantes. (Figure 1.6)

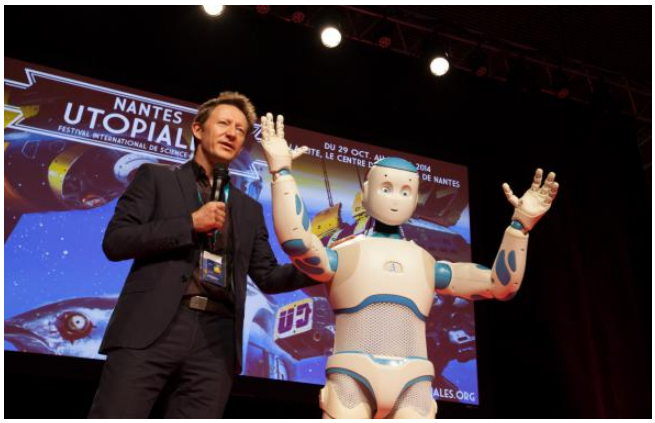

Figure 1.6: Rodolphe Gelin presenting the Romeo robot at Utopiales, Nantes, the International Festival of Science Fiction.

- Rodolphe Gelin (ALDEBARAN), presented and demonstrated Romeo in Futurapolis, 16-17 may 2014, Toulouse. Launched in 2012 by Le Point, in partnership with Toulouse Métropole and the Midi-Pyrénées region, Futurapolis is an annual forum dedicated to innovation in all domains of daily life.
- Rodolphe Gelin (ALDEBARAN), was invited to present the vision of the future market of humanoid robotics, in the international conference of Leading Enabling Technologies for Societal Challenges (LET'S2014), Sept. 29 - Oct. 1, 2014, Bologna, Italy. LET'S is an international Conference organised in the context of the Italian Presidency of the Council of the European Union, with the Patronage of the Ministry of Education, University and Research, the Ministry of Economic Development and the Ministry of Foreign Affairs, and supported by European Union Funding for Research and Innovation.(`www.lets2014.eu`)
- KTH work on kinematics constraint estimation was demonstrated to the public at the Museum of Science and Technology in Stockholm, on November 15–23, 2014, at the exhibition "Forskning Pågår" (Research in Progress).

1.4.3 Dissemination to high-school students

- As a part of the RoboHow dissemination, different campaigns and workshops for students of class 8 to 13 were carried out. Videos of those workshops can be found on `www.go4it.uni-bremen.de` and additionally on *YouTube*. Such workshops were advertised through local newspapers in advance.

  – Introductory robotics workshop (8th - 15th August 2014): Twelve students from high schools in Bremen participated, aged between 12 to 16 years. During the workshop

[14] http://innorobo.com/

they were introduced to the basics of the Java programming language in order to program a Lego Mindstorms robot.

- Advanced Robotics Workshop (31st March - 4th April 2014): Ten students participated in this RoboParcours workshop, aged between 13 to 16 years. In teams of two, the participants were asked to construct and program a Lego Mindstorms robot to cope autonomously on a predefined circuit.
- Advanced Robotics Workshop (1st - 5th September 2014): Ten students participated, aged between 14 to 18 years.

- Christian Smith from KTH gave an invited talk on domestic robotics to students at the high school Kunskapsskolan, in Uppsala, Sweden, on September 10, 2014.

1.4.4 Dissemination through RoboHow souvenirs

Following the idea to leave a long lasting memory of the project, we came up with some non conventional ways for dissemination. An official *RoboHow cup* with RoboHow logo, scenario and the names of partner organizations, and a greeting card with RoboHow scenario have been specially designed (see Figure 1.7) and over a period of time distributed to many universities, research centers, labs and visitors all over the world during various occasions.

Figure 1.7: RoboHow souvenir: The RoboHow cup (top) and the greeting card (bottom).

1.5 Release of open-source software

In addition to responsibly maintaining the open-source software, which were released during the first two years of the project (see Deliverable D8.2), the RoboHow partners have released several new components of the project as open-source code or free-to-use binary libraries.

KnowRob and **CRAM** have long been available as open source. In the third year, various improvements have been made in these systems:

- Enriched documentation and tutorials on `www.knowrob.org` and `www.cram-system.org`
- Tools for logging of execution data and log analysis
- Release of components for the automatic segmentation of 3D surface mesh models (partly implemented during Google Summer of Code 2014)
- Release of methods for representing and reasoning about motion constraints in the knowledge base (which can be interpreted/executed by the controllers from *WP3*)
- **Open-ease**: We have started a website `www.open-ease.org`, a web-based knowledge base, which is providing both knowledge processing services and comprehensive data of robot- and human experiments.

In addition, following new software packages have been released during the third year of the project:

- **Object Recognition Kitchen**: This modular set of tools allows for different object recognition pipelines to be used on 2D or 3D data. The different phases of capture, training and detection are implemented separately and are compatible with ROS under a BSD license. Several techniques are implemented (e.g. LINE-MOD) and official ROS packages and tutorials also exist.

  URL: `http://wg-perception.github.io/object_recognition_core/`

- **NAOqi-ROS bridge**: Official ROS packages under BSD license have been created to interact with the Aldebaran robots at different levels: autogenerated URDFs, Gazebo model, sensors bridges (sonar, camera, depth ...), NAOqi API bridges (low level and high level), GUIs (dashboard, tf, logs ...). Several tutorials have also been written to showcase the different functionalities and ways to code with NAOqi and ROS together.

  URL: `http://wiki.ros.org/nao`

- **SimTrack**: A simulation-based framework for tracking from KTH, this is a ROS-package for detecting and tracking the pose of multiple (textured) rigid objects in real-time. Released under the BSD license.

  URL: `https://bitbucket.org/karlpauwels/simtrack/`

- **ExpressionGraph**: This library provides expression trees for representation of geometric expressions and automatic differentiation of these expressions. This enables to write down geometric expressions at the position level, and automatically compute Jacobians and higher order derivatives efficiently and without loss of precision. The library is built upon the KDL

library and uses the same geometric primitives. Most operators and functions for the basic primitives of KDL have an equivalent in the expression tree library.

URL: `https://github.com/eaertbel/expressiongraph`

Chapter 2

Plan for the dissemination of knowledge

Continuing our commitment to dissemination of knowledge, the RoboHow consortium have already started planning for dissemination during the fourth and the final year of the RoboHow project and even begins implementing some of them, as outlined below.

2.1 Through dissemination material and project website

The project website (`http://robohow.eu/`) will be further enriched and kept alive and interesting for the scientific community, the public and the media. This will be achieved through:

- Informative Blog on the front page
- Announcements aboutRoboHow-related events, workshops, talks, schools, etc.
- Updating with publications and achievements activities
- Updating with multimedia materials
- Updating with press releases and media coverages

2.2 Through dissemination to the scientific community

Towards elevating the legacy of the RoboHow project, the RoboHow consortium will continue publishing result from the ongoing integration works, as well as partner specific research and developments. Also, several workshops will be planned, and some of them are already implemented, such as:

- Organization of a Special Session on Computational Intelligence applied to Vision and Robotics (CIVR[1]) in conjunction with IJCNN 2015. (FORTH)
- Organization of the IEEE Computer Society Workshop on "**Observing and understanding hands in action**" (HANDS 2015[2]), in conjunction with IEEE CVPR 2015. (FORTH)

[1] http://www.dtic.ua.es/~jgarcia/IJCNN2015/
[2] http://www.ics.uci.edu/~jsupanci/HANDS-2015/index.html

2.3 Through dissemination to the industry

As already done during the third year, Aldebaran being an industrial partner will further participate in major robotic event and present the robot and the potential industrial applications of the results of the project, such as *Innorobo 2015*, *European Robotics Forum (ERF 2015)*.

Other partners will also contribute in industrial exposure of RoboHow project, for example RoboHow partner (Hagen Langer) will deliver an invited talk on the research of RoboHow at the High-Tech Systems 2015 ('s-Hertogenbosch, the Netherlands).

In addition, Aldebaran, and other partners will continue publishing RoboHow and the robots related articles in leading magazines and news articles having industrial reach.

2.4 Through dissemination to future users and the general public

Based on the integration results, also including the Romeo robot at Aldebaran, in the final year there will be more interesting results and demonstrations planned for the general public. To ensure greater reach and public awareness about the project and potential usability, we will also make the videos available in the RoboHow YouTube channel [3] and on other personal and social networks.

2.5 Through release of open-source software and materials

Following the open-source strategy of RoboHow, partners will continue maintaining and enhancing the already released components as well as will be releasing new open-source software, documents, datasets. Some of the planned activities are:

- **SimTrack**: KTH will be extend current version to further support high resolution cameras (e.g. Kinect v2) and robot state rendering, to refine the robot pose estimate and account for robot/object occlusions.
- **Contact Point Estimator**: KTH will release an open-source ROS package for contact point estimation, runnable on any robot with force/torque sensing, based on method presented at ICRA 2014 (Karayiannidis et al.).
- **Open-ease** dataset will be enriched with new data of the ongoing experiments.

[3] https://www.youtube.com/channel/UCb6bsm_Kb99hk_FZaNDypFw

Chapter 3

Project publications

3.1 Peer-reviewed publications

[1] E. Aertbelien and J. De Schutter. etasl/etc: A constraint-based task specification language and robot controller using expression graphs. In *Intelligent Robots and Systems (IROS 2014), 2014 IEEE/RSJ International Conference on*, pages 1540–1546, Sept 2014.

[2] Mårten Björkman and Yasemin Bekiroğlu. Learning to disambiguate object hypotheses through self-exploration. In *IEEE-RAS International Conference on Humanoid Robots*, pages 560–565, Madrid Spain, 2014.

[3] R. de Kleijn, G. Kachergis, and B. Hommel. Everyday robotic action: Lessons from human action control. *Frontiers in Neurorobotics*, 8:13, 2014.

[4] P. Guler, Y. Bekiroglu, X. Gratal, K. Pauwels, and D. Kragic. What's in the container? classifying object contents from vision and touch. In *Intelligent Robots and Systems (IROS 2014), 2014 IEEE/RSJ International Conference on*, pages 3961–3968, Sept 2014.

[5] G. Kachergis, F. Berends, R. de Kleijn, and B. Hommel. Reward effects on sequential action learning in a trajectory serial reaction time task. In *The Fourth Joint IEEE International Conference on Development and Learning and on Epigenetic Robotics*, 2014.

[6] G. Kachergis, F. Berends, R. de Kleijn, and B. Hommel. Trajectory effects in a novel serial reaction time task. In *Proceedings of the 36th Annual Conference of the Cognitive Science Society*, 2014.

[7] G. Kachergis, D. Wyatte, R. C. O'Reilly, R. de Kleijn, and B. Hommel. A continuous-time neural model for sequential action. *Philosophical Transactions of the Royal Society B: Biological Sciences*, 369:20130623, 2014.

[8] Yiannis Karayiannidis, Christian Smith, and Danica Kragic. Mapping human intentions to robot motions via physical interaction through a jointly-held object. In *The 23rd IEEE International Symposium on Robot and Human Interactive Communication*, pages 391–397, Edinburgh, Scotland, UK, Aug 2014.

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