

# ICDL-EpiRob 2019 Preliminary Technical Program

## ICDL-EPIROB 2019 Technical Program Monday August 19, 2019

Workshops	08:00-09:00 Registration Desk <i>Registration</i>	09:00-10:30 Workshop Rooms <i>Early Morning Workshop Session</i>	10:30-11:00 Coffee Break Area <i>Coffee Break</i>	11:00-12:30 Workshop Rooms <i>Late Morning Workshop Session</i>	12:30-13:30 Lunch Room <i>Lunch Break</i>	13:30-15:00 Workshop Rooms <i>Early Afternoon Workshop Session</i>	15:00-15:30 Coffee Break Area <i>Coffee Break</i>	15:30-17:00 Workshop Rooms <i>Late Afternoon Workshop Session</i>
-----------	---	--	---	---	---	--	---	---

## ICDL-EPIROB 2019 Technical Program Tuesday August 20, 2019

Single Track	08:00-09:00 Registration Desk <i>Registration</i>	09:00-09:10 Plenary Room <i>Welcome</i>	09:10-10:10 Plenary Room <i>Keynote - Hod Lipson</i>	10:10-11:00 Plenary Room <i>Language Acquisition</i>	11:00-11:25 Coffee Break <i>Coffee Break</i>	11:25-12:40 Plenary Room <i>Development of Skills in Biological Systems and Robots</i>	12:40-13:40 Lunch Room <i>Lunch Break</i>	13:40-14:30 Plenary Room <i>Poster Teaser Session 1</i>	14:30-15:20 Poster <i>Poster Session 1</i>	15:20-17:00 Plenary Room <i>Sensorimotor Development</i>	19:00-20:30 Social Event <i>Tue_Recept1 Oslo City Hall Reception</i>
--------------	---	---	--	--	--	--	---	---	--	--	--

## ICDL-EPIROB 2019 Technical Program Wednesday August 21, 2019

Single Track	08:30-09:00 Registration Desk <i>Registration</i>	09:00-10:00 Plenary Room <i>Keynote - Stefanie Höhl</i>	10:00-10:50 Plenary Room <i>Action Selection and Planning</i>	10:50-11:15 Coffee Break Area <i>Coffee Break</i>	11:15-12:35 Plenary Room <i>MODELBot Challenge</i>	12:35-13:30 Lunch Room <i>Lunch Break</i>	13:30-14:30 Plenary Room <i>Keynote - Aude Billard</i>	14:30-15:30 Plenary Room <i>Poster Teasers 2</i>	15:30-16:30 Coffee Break Area <i>Coffee Break Poster Session 2</i>	17:30-22:30 Oslo Fjord <i>Boat Trip</i>
--------------	---	---	---	---	--	---	--	--	--	---

## ICDL-EPIROB 2019 Technical Program Thursday August 22, 2019

Single Track	08:30-09:10 Registration Desk <i>Registration</i>	09:10-10:00 Plenary Room <i>Social Learning</i>	10:00-10:50 Plenary Room <i>Cognitive Vision</i>	10:50-11:15 Coffee Break Area <i>Coffee Break</i>	11:15-12:30 Plenary Room <i>Machine Learning Methods for Robot Development</i>	12:30-13:30 Lunch Room <i>Lunch Break</i>	13:30-14:30 Plenary Room <i>Keynote - Michael J. Frank</i>	14:30-15:15 Plenary Room <i>Award Results and Closing</i>
--------------	---	---	--	---	--	---	--	---

## Monday August 19, 2019 Workshops

- Workshop on Naturalistic Non-Verbal and Affective Human-Robot Interactions (full day)
- Mapping the Self: Infants, Robots, And Modeling (full day)
- Workshop on Personal Robotics and Secure Human-Robot Collaboration (full day)
- 3rd Workshop on Language Learning (full day)
- Novel Substrates and Models for the Emergence of Developmental, Learning and Cognitive Capabilities (morning)
- Developmental psychology theories & research methods (afternoon)

## Workshop day (see detailed programs on each workshop's website)

8:00 - 9:00 Registration  
 9:00 - 10:30 Session  
 10:30 - 11:00 Coffee break  
 11:00 - 12:30 Session  
 12:30 - 13:30 Lunch (incl. in venue)  
 13:30 - 15:00 Session  
 15:00 - 15:30 Coffee break  
 15:30 - 16:30/17:00 Session

## Tuesday August 20, 2019

08:00-09:00 Registration

**09:00-09:10 Welcome**

**09:10-10:10 Keynote** - Hod Lipson

**10:10-11:00 Language Acquisition** (Chair: Cangelosi, Angelo, University of Manchester)

10:10-10:35 *Babbling Elicits Simplified Caregiver Speech: Findings from Natural Interaction and Simulation.*

Elmlinger, Steven      Cornell University  
Schwade, Jennifer      Cornell University  
Goldstein, Michael      Cornell University

10:35-11:00 *A New Look at Infant Preference for Infant-Directed Speech.*

Schroer, Sara      Indiana University  
Schwade, Jennifer      Cornell University  
Goldstein, Michael      Cornell University

**11:00-11:25 Coffee Break**

**11:25-12:40 Development of Skills in Biological Systems and Robots** (Chair: Ogata, Tetsuya, Waseda University)

11:25-11:50 *Hierarchical Control for Bipedal Locomotion Using Central Pattern Generators and Neural Networks.*

Auddy, Sayantan      Universität Innsbruck  
Magg, Sven      University of Hamburg  
Wermter, Stefan      University of Hamburg

11:50-12:15 *Neurocognitive Shared Visuomotor Network for End-To-End Learning of Object Identification, Localization and Grasping on a Humanoid.*

Kerzel, Matthias      Uni Hamburg  
Eppe, Manfred      University of Hamburg  
Heinrich, Stefan      Universität Hamburg  
Abawi, Fares      Universität Hamburg  
Wermter, Stefan      University of Hamburg

12:15-12:40 *Improving Robot Visual Skills by Means of a Bio-Inspired Model.*

Duran, Angel Juan      Universitat Jaume I  
del Pobil, Angel P.      Jaume-I University

**12:40-13:40 Lunch (incl. in venue)**

**13:40-14:30 Poster Teaser Session 1**

***Regular poster papers***

*Recognition in Human--Robot Interaction: The Gateway to Engagement.*

Brinck, Ingar      Lund University  
Balkenius, Christian      Lund University

*Reward-Punishment Actor-Critic Algorithm Applying to Robotic Non-Grasping Manipulation.*

Kobayashi, Taisuke      Nara Institute of Science and Technology  
Aotani, Takumi      Nara Institute of Science and Technology  
Guadarrama-Olvera, Julio Rogelio      Technical University of Munich

Dean-Leon, Emmanuel                      Technischen Universitaet Muenchen  
Cheng, Gordon                              Technical University of Munich

*Robot-Care for the Older People: Ethically Justified or Not?.*

Noori, Farzan                      University of Oslo  
Uddin, Md. Zia                      University of Oslo  
Torresen, Jim                      University of Oslo

*Robotic Interactive Physics Parameters Estimator (RIPPE).*

Dehban, Atabak                      Instituto Superior Técnico  
Cardoso, Carlos Eduardo              Universidade de Lisboa, Instituto Superior Técnico  
Vicente, Pedro                      Institute for Systems and Robotics (ISR-Lisboa-LARSyS),  
   Instituto Superior Técnico, Univ. Lisboa  
Bernardino, Alexandre              IST - Técnico Lisboa  
Santos-Victor, José                      Instituto Superior Técnico - Lisbon

*Robots Are Good for Profit: A Business Perspective on Robots in Education.*

Goudzwaard, Michael HU              University of Applied Sciences Utrecht  
Smakman, Matthijs                      Vrije Universiteit Amsterdam  
Konijn, Elly A.                      Dept. of Communication Science, Media Psychology Program,  
   Vrije

*Sensorimotor Cross-Behavior Knowledge Transfer for Grounded Category Recognition.*

Tatiya, Gyan                      Tufts University  
Hosseini, Ramtin                      Tufts University  
Hughes, Michael                      Tufts University  
Sinapov, Jivko                      Tufts University

*Understanding Motion As Feedback through an Ecological Scale.*

Saplaan, Diana                      University of Oslo  
Herstad, Jo                      University of Oslo

*Utilizing Pragmatic Frames As an Analytical Tool for Children's Performance During Word Learning.*

Rohlfing, Katharina                      Paderborn University  
Grimminger, Angela                      Paderborn University

*VIRCO: A Virtual Reality Tool for Long-Term Training and Evaluation of the Cognitive Skills Development in an Interactive Sensory Substitution Environment.*

Bizon, Patrycja                      Jagiellonian University  
Gwiazdzinski, Pawel                      Jagiellonian University  
Hat, Katarzyna                      Jagiellonian University  
Osinski, Dominik                      Norwegian University of Science and Technology  
Reuter, Magdalena                      Jagiellonian University  
Fauchald, Erlend                      Norwegian University of Science and Technology  
Verma, Shivam                      Norwegian University of Science and Technology  
Skylstad, Thea Karin                      Norwegian University of Science and Technology  
Soerli, Stian                      Norwegian University of Science and Technology  
Thorsen, Jonas Einar                      Norwegian University of Science and Technology  
Wierzchon, Michal                      Jagiellonian University

*Within Reach? Learning to Touch Objects without Prior Models.*

de La Bourdonnaye, François	Frankfurt Institute for Advanced Studies
Teuliere, Celine	Blaise Pascal University
Chateau, Thierry	Clermont Auvergne University
Triesch, Jochen	Frankfurt Institute for Advanced Studies

**Poster Abstracts**

*Hyperbolically-Discounted Reinforcement Learning on Reward-Punishment Framework.*

Kobayashi, Taisuke Nara Institute of Science and Technology

*Analysis of Imitative Interactions between Typically Developed or Autistic Participants and a Robot with a Recurrent Neural Network.*

Murata, Shingo	National Institute of Informatics
Hirano, Kai	Waseda University
Higashi, Naoto	Waseda University
Kumagaya, Shinichiro	The University of Tokyo
Yamashita, Yuichi	National Center of Neurology and Psychiatry
Ogata, Tetsuya	Waseda University

*Robot Recognizing Vowels in a Multimodal Way.*

Valentin, Paul	UMR - 8051, Université De Cergy-Pontoise
Boucenna, Sofiane	CNRS - Cergy-Pontoise University
Gaussier, Philippe	CNRS UMR 8051, ENSEA, Cergy-Pontoise University
Pitti, Alexandre	University of Cergy Pontoise

*Coding Graphene Sensors Using for the Miniaturization of Smart Robots.*

Liu, Peiguo	National University of Defense Technology
Zhaowen, Zhuang	College of Electronic Science, National University of Defense Technology
XiaoHui, Liu	College of Electronic Science, National University of Defense Technology
Ligang, Li	College of Electronic Science, National University of Defense Technology
Jibo, Wei	College of Electronic Science, National University of Defense Technology
Hongqiang, Wang	College of Electronic Science, National University of Defense Technology

*Parents' Views on Social Robots for Language Learning.*

Tolksdorf, Nils Frederik	Paderborn University
Siebert, Scarlet	TH Köln University of Applied Sciences
Rohlfing, Katharina	Paderborn University
Zorn, Isabel	TH Köln University of Applied Sciences

*Robot Self-Calibration from Combined Visual and Tactile Perception.*

Zenha, Rodrigo	Advanced Robotics at Queen Mary (ARQ), Queen Mary University
Vicente, Pedro	Institute For Systems and Robotics - ISR Lisboa
Bernardino, Alexandre	IST - Técnico Lisboa
Jamone, Lorenzo	Queen Mary University London

*The Sound of Actuators: Disturbance in Human - Robot Interactions?.*

Jouaiti, Melanie      Université De Lorraine, CNRS, Inria, LORIA, F-54000 Nancy, France

Henaff, Patrick      Université De Lorraine, CNRS, INRIA, LORIA, F-54000 Nancy, France

*Learning Multiple Tasks by Self-Goal-Setting Based on Self-Evaluation.*

Tanaka, Kazutoshi      University of Tokyo

Karino, Izumi      The University of Tokyo

Kanazawa, Hoshinori      The University of Tokyo

Niiyama, Ryuma      University of Tokyo

Kuniyoshi, Yasuo      The University of Tokyo

*The Homunculus for Proprioception: Toward Learning the Representation of a Humanoid Robot's Joint Space Using Self-Organizing Maps.*

Gama, Filipe      Czech Technical University in Prague

Hoffmann, Matej      Czech Technical University In Prague

*Prediction of Infants Attachment by Using Audio Features.*

Li, Honggai      Peking University

Cui, Jinshi      Peking University

Wang, Li      Peking University

**14:30-15:20 Poster Session 1 with coffee break**

The posters presented in the previous Poster Teaser Session

**15:20-17:00 Sensorimotor Development** (Chair: Navarro-Guerrero, Nicolás, Aarhus University)

15:20-15:45 *Self-Supervised Body Image Acquisition Using a Deep Neural Network for Sensorimotor Prediction.*

Laflaquière, Alban      AI Lab, SoftBank Robotics EU

Hafner, Verena Vanessa      Humboldt-Universität Zu Berlin

15:45-16:10 *The Role of Object Motion in Visuo-Haptic Exploration During Development.*

Sciutti, Alessandra      Italian Institute of Technology

Sandini, Giulio      Italian Institute of Technology

16:10-16:35 *An Interdisciplinary Overview of Developmental Indices and Behavioral Measures of the Minimal Self.*

Georgie, Yasmin Kim      Humboldt-Universität zu Berlin, Institut für Informatik - Adaptive Systems Group

Schillaci, Guido      Humboldt Universität zu Berlin

Hafner, Verena Vanessa      Humboldt-Universität zu Berlin

16:35-17:00 *Spike Timing Dependent Plasticity Enhances Integrated Information at the EEG Level: A Large-Scale Brain Simulation Experiment.*

Fujii, Keiko      The University of Tokyo

Kanazawa, Hoshinori      The University of Tokyo

Kuniyoshi, Yasuo      The University of Tokyo

**19:00-20:30 Oslo City Hall Reception**

## Wednesday August 21, 2019

**08:30-09:00 Registration**

**09:00-10:00 Keynote - Stefanie Höhl**

**10:00-10:50 Action Selection and Planning** (Chair: Ugur, Emre, Bogazici University)

10:00-10:25 *Autonomously Learning Beliefs Is Facilitated by a Neural Dynamic Network Driving an Intentional Agent.*

Tekülve, Jan                      Ruhr-Universitaet Bochum

Schöner, Gregor                Ruhr University Bochum

10:25-10:50 *Looking Back and Ahead: Adaptation and Planning by Gradient Descent.*

Murata, Shingo                National Institute of Informatics

Sawa, Hiroki                    Waseda University

Sugano, Shigeki                Waseda University

Ogata, Tetsuya                 Waseda University

**10:50-11:15 Coffee Break**

**11:15-12:35 MODELBot Challenge Session** (Chair: Ellefsen, Kai Olav, University of Oslo)

11:15-11:20 *Introduction by Kai Olav Ellefsen*

11:20-11:45 *Replication of Infant Behaviours with a Babybot: Early Pointing Gesture Comprehension.*

Serhan, Baris                    The University of Manchester

Cangelosi, Angelo              University of Manchester

11:45-12:10 *Reaching Development through Visuo-Proprioceptive-Tactile Integration on a Humanoid Robot -- a Deep Learning Approach.*

Nguyen, Dong Hai Phuong      University of Hamburg

Hoffmann, Matej                Czech Technical Univ. in Prague

Pattacini, Ugo                    Istituto Italiano di Tecnologia

Metta, Giorgio                    Istituto Italiano di Tecnologia (IIT)

12:10-12:35 *A Predictive Coding Model of Representational Drawing in Human Children and Chimpanzees.*

Philippsen, Anja Kristina      The University of Tokyo

Nagai, Yukie                      The University of Tokyo

**12:35-13:30 Lunch (incl. in venue)**

**13:30-14:30 Keynote - Aude Billard**

**14:30-15:30 Poster Teasers Session 2**

**Regular Poster Papers**

*Musculoskeletal Bias on Infant Sensorimotor Development Driven by Predictive Learning.*

Higuchi, Kaoruko                The University of Tokyo

Kanazawa, Hoshinori The University of Tokyo  
Suzuki, Yuma University of Tokyo  
Fujii, Keiko The University of Tokyo  
Kuniyoshi, Yasuo The University of Tokyo

*Curriculum Goal Masking for Continuous Deep Reinforcement Learning.*

Eppe, Manfred University of Hamburg  
Magg, Sven University of Hamburg  
Wermter, Stefan University of Hamburg

*A Categorization of Reinforcement Learning Exploration Techniques Which Facilitates Combination of Different Methods.*

Teigen, Bjørn Ivar University of Oslo  
Ellefsen, Kai Olav University of Oslo  
Torresen, Jim University of Oslo

*A Cognitive Architecture for Socially Adaptable Robots.*

Tanevska, Ana Istituto Italiano Di Tecnologia  
Rea, Francesco Istituto Italiano Di Tecnologia  
Sandini, Giulio Italian Institute of Technology  
Canamero, Lola University of Hertfordshire  
Sciutti, Alessandra Istituto Italiano Di Tecnologia

*Action Selection Based on Prediction for Robot Planning.*

Nie, Mengxi Peking University  
Luo, Dingsheng Peking University  
Liu, Tianlin Peking University  
Wu, Xihong Peking University

*An Optimization Framework for Task Sequencing in Curriculum Learning.*

Foglino, Francesco University of Leeds  
Coletto Christakou, Christiano University of Leeds  
Leonetti, Matteo University of Leeds

*Does Training on Broad Band Tactile Stimulation Promote the Generalization of Learning?.*

Lelo de Larrea-Mancera, Esteban Sebastian University of California Riverside  
Dempsey-Jones, Harriet University College London  
Makin, Tamar University College London  
Seitz, Aaron R. University of California Riverside

*Learning to Parse Grounded Language Using Reservoir Computing.*

Hinaut, Xavier INRIA  
Spranger, Michael Sony Computer Science Laboratories Inc.

*Analysis of How Personality Traits Affect Children's Conversational Play with an Utterance-Output Device.*

Ichikawa, Jun Kyoto Institute of Technology  
Mitsukuni, Kazuhiro Kyoto Institute of Technology  
Hori, Yukari Hakuhodo Inc  
Ikeno, Yuta Hakuhodo I-Studio Inc  
Alexandre, Leblanc Hakuhodo I-Studio Inc

Kawamoto, Tetsukazu                      Hakuhodo I-Studio Inc  
Nishizaki, Yukiko                      Kyoto Institute of Technology  
Oka, Natsuki                              Kyoto Institute of Technology

*Autonomous Reinforcement Learning of Multiple Interrelated Tasks.*

Santucci, Vieri Giuliano                  Consiglio Nazionale Delle Ricerche  
Baldassarre, Gianluca                  National Research Council of Italy  
Cartoni, Emilio                          CNR

*Creative Problem Solving by Robots Using Action Primitive Discovery.*

Evana, Gizzi                              Tufts University  
Guaman Castro, Mateo                  Tufts University  
Sinapov, Jivko                          Tufts University

*Efficient Intrinsically Motivated Robotic Grasping with Learning-Adaptive Imagination in Latent Space.*

Hafez, Muhammad Burhan              University of Hamburg  
Weber, Cornelius                      Knowledge Technology Group, University of Hamburg  
Kerzel, Matthias                      Uni Hamburg  
Wermter, Stefan                      University of Hamburg

*Hindsight Experience Replay with Experience Ranking.*

Nguyen, Hai                              University of Nevada, Reno  
La, Hung                                  University of Nevada at Reno  
Deans, Matthew                      NASA Ames Research Center

*How Development in the Bayesian Brain Facilitates Learning.*

Oliva, Daniel                              Technical University of Munich  
Philippson, Anja Kristina              The University of Tokyo  
Nagai, Yukie                              The University of Tokyo

*Modeling Self-Organized Emergence of Perspective In/variant Mirror Neurons in a Robotic System.*

Pospichal, Jakub                      Comenius University in Bratislava  
Farkas, Igor                              Comenius University in Bratislava  
Pechac, Matej                          Comenius University in Bratislava  
Malinová, Kristína                      Czech Technical University in Prague

*KALA: Robotic Platform for Teaching Algorithmic Thinking to Children.*

Gerlein, Eduardo                      Pontificia Universidad Javeriana  
Castelblanco, Oscar J.                  Pontificia Universidad Javeriana  
Donado, Laura M.                      Pontificia Universidad Javeriana  
González, Enrique                      Pontificia Universidad Javeriana

*Mindreading for Robots: Predicting Intentions Via Dynamical Clustering of Human Postures.*

Vinanzi, Samuele                      The University of Manchester  
Goerick, Christian                      Honda Research Inst. Europe GmbH  
Cangelosi, Angelo                      University of Manchester

*Modelling the Single Word to Multi-Word Transition Using Matrix Completion.*

Pizzuto, Gabriella                      University of Manchester



Hospedales, Timothy	Queen Mary University of London
Capirci, Olga	Consiglio Nazionale Delle Ricerche (Istituto ISTC)
Cangelosi, Angelo	University of Manchester

*Motor Coordination Learning for Rhythmic Movements.*

Jouaiti, Melanie	Université De Lorraine, CNRS, Inria, LORIA, F-54000 Nancy, France
Henaff, Patrick	Université De Lorraine, CNRS, INRIA, LORIA, F-54000 Nancy, France

### **2019 IEEE TCDS Outstanding Paper Award Poster**

H. Celikkanat, G. Orhan, N. Pugeault, F. Guerin, E. Sahin, S. Kalkan, "*Learning Context on a Humanoid Robot using Incremental Latent Dirichlet Allocation*", IEEE Transactions on Cognitive and Developmental Systems, 8(1):42-59, 2016.

### **15:30-16:30 Paper Posters Session 2**

The posters presented in the previous Poster Teaser Session

### **17:30-22:30 Oslo Fjord Cruise Banquet**

## **Thursday August 22, 2019**

### **08:30-09:10 Registration**

### **09:10-10:00 Social Learning** (Chair: Sciutti, Alessandra, Istituto Italiano Di Tecnologia)

09:10-09:35 *Toddlers' Hands Organize Parent-Toddler Attention across Different Social Contexts.*

Elmlinger, Steven	Cornell University
Suanda, Umay	University of Connecticut
Linda, Smith	Professor Psychological and Brain Sciences, Indiana University
Yu, Chen	Indiana University

09:35-10:00 *New Evidence for Learning-Based Accounts of Gaze Following: Testing a Robotic Prediction.*

Silverstein, Priya	Lancaster University
Westermann, Gert	Lancaster University, UK
Parise, Eugenio	Lancaster University
Twomey, Katherine	University of Manchester

### **10:00-10:50 Cognitive Vision** (Chair: Nagai, Yukie, The University of Tokyo)

10:00-10:25 *Training-ValueNet: Data Driven Label Noise Cleaning on Weakly-Supervised Web Images.*

Smyth, Luka	University of Exeter
Kangin, Dmitry	Lancaster University
Pugeault, Nicolas	University of Exeter

10:25-10:50 *Contextual Relabelling of Detected Objects.*

Alamri, Faisal	The University of Exeter
Pugeault, Nicolas	University of Exeter

**10:50-11:15 Coffee Break**

**11:15-12:30 Machine Learning Methods for Robot Development** (Chair: da Silva, Bruno Castro, The Federal University of Rio Grande do Sul)

11:15-11:40 *Behavioral Repertoire Via Generative Adversarial Policy Networks.*

Jegorova, Marija University of Edinburgh

Hospedales, Timothy Queen Mary University of London

Doncieux, Stéphane Pierre and Marie Curie University

11:40-12:05 *Online Associative Multi-Stage Goal Babbling Toward Versatile Learning of Sensorimotor Skills.*

Rayyes, Rania TU Braunschweig

Steil, Jochen J. Technische Universität Braunschweig

12:05-12:30 *Identifying Reusable Early-Life Options.*

Weber, Aline Federal University of Rio Grande Do Sul

Martin, Charles University of Oslo

Torresen, Jim University of Oslo

C. da Silva, Bruno Federal University of Rio Grande Do Sul (UFRGS)

**12:30-13:30 Lunch (incl. in venue)**

**13:30-14:30 Keynote - Michael J. Frank**

**14:30-15:15 Award Results and Closing**