IMOL Workshop 2022: 4-6. April 2022

https://2022.imol-conf.org

at Max Planck Institute for Intelligent Systems

Day 1:

- **09:00-09:10*:* Opening (Organizers)**
- 09:10-09:50: **Georg Martius** *Intrinsically motivated learning: from information theory to causal influence*
- 09:50-10:30: **Stéphane Doncieux** *Solving hard exploration problems with Novelty Search*
- 10:30-10:40: Discussion — session chair: Vieri Santucci
- **10:40-11:00:** *Coffee Break*
- 11:00-11:40: **Jun Tani** (remote) *Neurorobotics experiments on goal-directed planning based on active inference*
- 11:40-12:20: **Jochen Triesch** *Learning to see without supervision*
- 12:20-12:30: Discussion — session chair: Martin Butz
- **12:30-13:30:** *Lunch Break*
- 13:30-14:10: **Richard Duro** *Epistemic-MDB: First Steps Towards Purposeful IMOL*
- 14:10-14:50: **Mai Nguyen** *Intrinsic motivation to interact with teachers for multi-task learning*
- 14:50-15:00: **Franziska Brändle** *Intrinsically Motivated Exploration as Empowerment (contributed talk)*
- 15:00-15:20: Discussion — session chair: Rania Rayyes
- **15:20-15:40:** *Coffee Break*
- 15:40-17:00: Posters A
- *17:00-17:40: End-day discussion*
- **17:40-19:00:** *REAL-Competition hands-on workshop*

Day 2:

- 09:00-09:40: **Martin Butz** *Developing Event-Predictive Gestalt Models for Perception and Behavior*
- 09:40-10:20: **Kathryn Kasmarik** (remote) *Autonomous Bootstrapping of Collective Motion Behaviours for Swarming Robots*
- 10:20-10:30: Discussion — session chair: Richard Duro
- **10:30-10:50:** *Coffee Break*
- 10:50-11:30: **Martin Riedmiller** *Collect & Infer: how to efficiently learn control*
- 11:30-12:10: **Daniel Polani** (remote) *Intrinsic motivations: Where from, where to?*
- 12:10-12:30: Discussion — session chair: Stéphane Doncieux
- **12:30-13:30:** *Lunch Break*
- 13:30-14:10: **Vieri Santucci** *Hierarchical robotic architectures for the autonomous learning of multiple tasks*
- 14:10-14:50: **Deepak Pathak** (remote) *Continually Improving Robots: Unsupervised Exploration and Rapid Adaptation*
- 14:50-15:00: **Ahmed Akakzia** *Help Me Explore: Minimal Social Interventions for Autotelic Agents (contributed talk)*
- 15:00-15:20: Discussion — session chair: Martin Riedmiller
- **15:20-15:40: Coffee Break**
- 15:40-17:00: Posters B
- *17:15-18:00: Transition to the city center (foot or bus)*
- **18:00-19:30:** *Intrinsic and externally guided exploration of Tübingen*
- **19:30: *Social Dinner at Neckarmüller***
- 20:30-21:30: Scientific networking and decision about the venue of the next IMOL

Day 3:

- 09:00-09:40: **Kaushik Subramanian** *Outracing Champion Gran Turismo Drivers with Deep Reinforcement Learning*
- 09:40-10:20: **Azzurra Ruggeri** *Emergence and Developmental Trajectory of Ecological Learning*
- 10:20-10:30: Discussion — session chair: Georg Martius
- **10:30-10:50:** *Coffee Break*
- 10:50-11:30: **Rania Rayyes** *Efficient Interest-Driven Exploration for Real Robot Applications*
- 11:30-12:10: **Charley Wu** *Developmental changes in learning resemble stochastic optimization in the space of learning strategies*
- 12:10-12:20: **Filipe Gama** *Active tactile exploration for body model learning (contributed talk)*
- 12:20-12:30: Discussion — session chair: Mai Nguyen
- **12:30-13:30:** *Lunch*
- 13:30-14:30: Closing remarks and collection of open problems in the field

Posters (Session A/Day 1, Session B/Day2):

1. Aviv Tamar, Daniel Soudry and Ev Zisselman: *Learning to Explore from Data -- a Bayesian RL Perspective*
2. Mehdi Zadem, Sergio Mover, Sao Mai Nguyen and Sylvie Putot: *Towards Automata-Based Abstraction of Goals in Hierarchical Reinforcement Learning*
3. Valentin Marcel and Matej Hoffmann: *Learning self-reaching using a generative model from self-touch configurations*
4. Jason Khoury, Sergiu Tcaci Popescu and Matej Hoffmann: *Intrinsic motivation in infant's self-touch exploration*
5. Filipe Gama, Maksym Shcherban, Matthias Rolf and Matej Hoffmann: *Active tactile exploration for body model learning*
6. Fedor Scholz, Christian Gumbsch, Sebastian Otte and Martin V. Butz: *Inference of Affordances and Active Motor Control in Simulated Agents*
7. Billy I. Lyons and J. Michael Herrmann: *Learning to teach by reflexive reinforcement learning*
8. Pierre Schumacher, Daniel Häufle, Dieter Büchler and Georg Martius: *Show Me What You Can: Intrinsic Self-Exploration of Muscle-Driven Systems*
9. Cansu Sancaktar, Arash Tavakoli and Georg Martius: *Curious Exploration via Structured World Models*
10. Alejandro Romero, Gianluca Baldassarre, Richard J. Duro and Vieri Giuliano Santucci: *Autonomous learning of interdependent goals in non-stationary environments*
11. Franziska Brändle, Lena Stocks, Joshua Tenenbaum, Samuel Gershman and Eric Schulz: *Intrinsically Motivated Exploration as Empowerment*
12. Marcel Binz and Eric Schulz: *Exploration With a Finite Brain*
13. Emilio Cartoni, Davide Montella, Jochen Triesch and Gianluca Baldassarre: *Robot open-ended autonomous learning architectures: challenges and solutions in the REAL testbed*
14. Thomas Schnürer, Malte Probst and Horst-Michael Gross: *Utilizing Emergent, Task-Independent Knowledge Representations for Accelerated Task-Learning in Reinforcement Learning*
15. Cédric Colas, Tristan Karch, Thomas Carta, Clément Moulin-Frier and Pierre-Yves Oudeyer: *Towards a Vygotskian Autotelic Artificial Intelligence: The Internalization of Cognitive Tools from Rich Socio-Cultural Worlds*
16. Ahmed Akakzia, Olivier Serris, Olivier Sigaud and Cédric Colas: *Help Me Explore: Minimal Social Interventions for Autotelic Agents*
17. Louis Annabi: *Intrinsically motivated learning of causal world models*