Jean-Baptiste Mouret

Current position Tenured Senior Researcher at Inria (*directeur de recherche, DR2*)
Date of birth May 20th, 1981
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Keywords robot learning, data-efficiency, black-box optimization, evolutionary computation, neuro-evolution

Research topic: I study machine learning and evolutionary computation as a means to design highly adaptive robots. I am currently focused on data-efficient policy search ("micro-data") and adaptation to damage.

Highlights:

- Senior author of a paper in Nature ("Robots that can adapt like animals", cover, 2015)
- PI of an ERC Starting grant (most prestigious European grant, May 2015-2020 — 1.5 M €): "ResiBots"
- Several best papers and personal awards
- 6000+ citations (Google Scholar)

European Research Council
Established by the European Commission

Education

June 2015 Habilitation to Direct Researches (HDR), Pierre and Marie Curie University (UPMC), Paris, France
Dec. 2008 PhD in computer science, Pierre and Marie Curie University (UPMC), France
Sep. 2005 Master (MsC) "Artificial intelligence and decision", Pierre and Marie Curie University[1], Paris, France (top 10%)
Sep. 2004 Master (engineering school) "Scientific computation and image", EPITA, France (top 10%)
Technical skills I mostly program in modern C++ (see *selected software*, page 4) and Python.

Academic positions

Sept. 2017–... Directeur de Recherche Inria / Tenured Senior Researcher[2] — *Inria is the top French research institute for computer science and robotics.*
May 2015– Sept. 2017 Inria Research Scientist (CR1), Inria Nancy - Grand Est (*on secondment* from UPMC)
Sep. 2014–Apr. 2015 CNRS *délégation* (section 7) [sabbatical]
Sep. 2009–Apr. 2015 *Maître de conférences* (eq. assistant professor), Pierre and Marie Curie University, Paris, France
Sep. 2008–Sep. 2009 Temporary assistant professor (ATER), Pierre and Marie Curie University, Paris, France

Research stays

2014 (5 months) Visiting professor, Technische Universität Darmstadt, Germany (invited by Jan Peters)
| *The Intelligent Autonomous System Lab, headed by J. Peters, focuses on machine learning for robotics.*

[1]Now Sorbonne University
[2]This position is roughly equivalent to an associate professor position, but with no mandatory teaching.

2011 and 2012 (1 + 1 months) Visiting professor, Cornell University, NY, USA (invited by Hod Lipson)
| *Cornell's Creative Machines lab, headed by H. Lipson, uses machine learning and evolutionary algorithms to make robots "creative" problem solvers.*

2010 (3 months) Visiting professor, University of Vermont, VT, USA (invited by Josh Bongard)
| *Josh Bongard published a paper about "resilient robotics" (Bongard et al., Science, 2006) which has been highly influential in my work.*

Awards and best papers

2019 International Society for Artificial Life (ISAL)[3] award for the Outstanding Publication of the Decade 2004-2014 : J. Clune, J.-B. Mouret, H. Lipson
2017 ISAL Award for Distinguished Young Investigator in the field of Artificial Life .
2016 ISAL Award for Outstanding Paper of 2015 in the field of Artificial Life : J.-B. Mouret, A. Cully, J. Clune, D. Tarapore
Prix La Recherche 2016 (*Science de l'Information*): J.-B. Mouret, A. Cully, J. Clune, D. Tarapore

Finalist for the best interactive paper award, IEEE Humanoids 2020: Vianello, L, Mouret, J.-B., Dalin, E., Aubry, A. and Ivaldi, S. "Human Posture Prediction during Physical Human-Robot Interaction"
Best paper, GECCO 2018, Complex Systems track: (15 accepted papers in track / 3 nominees) Gaier, A., Asteroth, A., and Mouret J.-B. "Data-efficient Neuroevolution with Kernel-Based Surrogate Models".
Best paper, GECCO 2017, Complex Systems track: (14 accepted papers in the track / 4 nominees) Gaier, A., Asteroth, A., and Mouret J.-B. "Data-Efficient Exploration, Optimization, and Modeling of Diverse Designs through Surrogate-Assisted Illumination".
Best student paper (for A. Gaier), 18th AIAA / ISSMO Multidisciplinary Analysis and Optimization Conference: Gaier, A., Asteroth, A., and Mouret J.-B. "Aerodynamic Design Exploration through Surrogate-Assisted Illumination"
Highly recommended paper, category "Control of CLAWAR", CLAWAR 2011: S. Koos and J-B. Mouret. "On-line Discovery of Locomotion Modes for Wheel-Legged Hybrid Robots: a Transferability-based Approach".
Best paper, GECCO 2011, GDS track: (20 accepted papers in the track) P. Tonelli and J.-B. Mouret. "On the Relationships between Synaptic Plasticity and Generative Systems".
Best student paper, IEEE CEC 2009: (448 accepted papers) J.-B. Mouret and S. Doncieux. "Evolving modular neural-networks through exaptation".

SELECTED PUBLICATIONS

The full list of publications is on page 9.
All the publications can be downloaded on: http://members.loria.fr/JBMouret/publications.html
Google scholar page: http://scholar.google.fr/citations?user=lp8V_UYAAAAJ&hl=en&oi=ao

Selected journal papers

Cully, A., Clune, J., Tarapore, D., and Mouret, J.-B. (2015) *Robots that can adapt like animals*. Nature, Vol 521 Pages 503-507. https://arxiv.org/abs/1407.3501
→ We introduce a fast trial-and-error learning algorithm that allows autonomous robots to recover from unforeseen damages in less than 2 minutes. The algorithm combines a repertoire evolved in simulation (with MAP-Elites) and online Bayesian optimization with Gaussian processes.

[3] *ISAL is the main scientific society for artificial life, which includes evolutionary robotics and computational evolutionary biology.*

- This paper follows up on our first contribution about learning/evolution for damage recovery, published in the International Journal of Robotics Research (IJRR; Koos, Cully, and Mouret, 2013).
- Impact: This paper is on the cover of the Nature's issue of the 28th of May 2015. It was accompanied by a commentary ("News and Views") by Chris Adami. Nature is the most prestigious and most selective scientific journal in the world (impact factor 2016: 40.1); this paper has been covered by all the major news outlets in the world (e.g. Washington Post, The Times, The Guardian, Le Monde, NPR "Science Friday", Scientific American, BBC News, ...) and the associated videos have been viewed more than 200,000 times so far (youtube). This article has been cited more than 350 times (Google Scholar).

Clune*, J., Mouret*, J.-B. and Lipson, H. (2013). ***The evolutionary origins of modularity.*** **Proceedings of the Royal Society B, Vol 280, Pages 20122863. https://arxiv.org/abs/1207.2743** (* J. Clune and J.-B. Mouret contributed equally to this work).

→ The evolution of modularity in biological networks is one of the main open questions in evolutionary biology. Here we used evolutionary computation tools to demonstrate that the ubiquitous, direct selection pressure to reduce the cost of connections between network nodes causes the emergence of modular networks.

- Impact: Proceedings of the Royal Society B is one of the main journals in biology (impact factor 2016: 4.9). This work has been covered by several news outlets (e.g. MIT's Technology review, Fast Company, Carl Zimmer's blog on National Geographics). This article has been cited more than 420 times (Google Scholar).

Mouret, J.-B. and Doncieux, S. (2012). ***Encouraging Behavioral Diversity in Evolutionary Robotics: an Empirical Study.*** **Evolutionary Computation. Vol 20 No 1 Pages 91-133. https://hal.archives-ouvertes.fr/hal-00687609**

→ We introduce an effective approach to mitigate premature convergence in evolutionary robotics, which is one of the main challenges of the field.

- Impact: Evolutionary computation is one of the top journals in evolutionary computation (impact factor 2014: 2.366). Several teams investigated follow-ups of this work. This article is in the top 20 most downloaded papers of the journal since 2013 and has been cited more than 210 times.

Selected conference papers

K. Chatzilygeroudis, R. Rama, R. Kaushik, D. Goepp, V. Vassiliades, and J.-B. Mouret (2017). ***Black-Box Data-efficient Policy Search for Robotics.*** **In: IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS). https://arxiv.org/abs/1703.07261**

→ This paper introduces the Black-DROPS algorithm, which is a state-of-the-art data-efficient reinforcement learning algorithm that combines model-based policy search, Gaussian processes, and parallelizable black-box optimization (CMA-ES). A follow-up paper that combines this algorithm with priors from simulation is accepted at ICRA 2018 (Chatzilygeroudis and Mouret, 2018).

J. Spitz, K. Bouyarmane, S. Ivaldi, and J.-B. Mouret. (2017). ***Trial-and-Error Learning of Repulsors for Humanoid QP-based Whole-Body Control. In: Proc. of IEEE Humanoids. https://arxiv.org/abs/1703.07261***

→ This paper is our first proposal for leveraging state-of-the-art whole body control (based on quadratic programming) and data-efficient learning.

A. Gaier, A. Asteroth, and J.-B. Mouret. (2017). ***Data-Efficient Exploration, Optimization, and Modeling of Diverse Designs through Surrogate-Assisted Illumination.*** **In: Genetic and Evolutionary Computation Conference (GECCO 2017). https://hal.inria.fr/hal-01518698**

→ This paper exploits ideas from quality diversity algorithms (MAP-Elites) and Bayesian optimization with Gaussian processes to solve aerodynamics design problems.

- It received the best paper award (CS Track) at GECCO 2017 and a related paper received the Best Student Paper award at AIAA/ISSMO Multidisciplinary Analaysis and Optimization Conference.

This paper has been extended to a journal article (Evolutionary Computation).

Other selected articles

J.-B. Mouret and J. Clune. ***Illuminating search spaces by mapping elites*****. In: arXiv preprint (2015). http://arxiv.org/abs/1504.04909**

- This article introduces MAP-Elites, a novel kind of evolutionary algorithm that creates repertoires of high-performing solutions. This work has been extended by many groups (including ours) in the last two years. The paper has been cited 64 times (Google scholar).

Selected software

Limbo Lightweight, high-performance framework for Gaussian processes and Bayesian optimization. Template-based C++11, optimized for multi-core architectures. Used in 9 scientific papers from our group. See: http://www.resibots.eu/limbo and http://github.com/resibots/limbo

Sferes$_{v2}$ Framework for multi-objective evolutionary computation and neuro-evolution. Template-based C++08, optimized for multi-core architectures. Used in more than 40 scientific papers, from our group and a few others in the world. See: http://github.com/sferes2/

See also: http://github.com/resibots/ and http://github.com/jbmouret/

MAIN FUNDING & GRANTS

Personnal grants as PI

Resibots (ERC Starting Grant) [May 2015 – Apr. 2020] GA 637972

- Role: Principal Investigator (*porteur*)
- 1.5 M € (European Research Council)
- Success rate (ERC STG 2014): 11 %
- The goal of the ResiBots project is to provide the algorithmic foundations for low-cost robots that can autonomously recover from unforeseen damages in a few minutes.
- http://www.resibots.eu

Creadapt (ANR "young researcher") [jan. 2013 – dec. 2015] ANR-12-JS03-0009

- Role: Principal Investigator (*porteur*)
- 249 k € (Agence Nationale pour la Recherche)
- Success rate: about 20%
- The Creadapt project is centered on evolution for adaptation, both in biology and robotics. It includes the development of new algorithms and their implementation on a new wheel-leg hybrid robot.
- http://www.creadapt.net

Chercheur d'avenir (région Lorraine) [2016-2017] – funding for a post-doc (12 months)

Collaborative projects

ANR-ASTRID Proxilearn [2019-2023]

- Role: Coordinator
- Other partners: Institut des Sciences du Mouvement (Aix-Marseille Université)
- 150 k€ for Inria (300 k€ total)
- Learning for proximity flying: learning to fly drones in pipes and air ducts

STELLAR (DARPA Lifelong Learning Machines program) [2018-2020]

- Role: PI for Inria
- Other partners: HRL (USA), University of California Irvine (USA), University of Texas Austin (USA), Loughborough University (UK), IT University of Copenhagen (Denmark)
- 232 k€ for Inria
- Super Turing Evolving Lifelong Learning ARchitecture: Design learning algorithms to continually improve performance and update knowledge based on experience, without human supervision

Chist-Era HEAP [March 2019 – Feb. 2022]

- Role: member of the Inria team
- Other partners: Lincoln University (UK, coordinator), Italian Institute of Technology (Italy), TU Wien (Austria), IDIAP (Switzerland)
- 294 k € for Inria
- Human-Guided Learning and Benchmarking of Robotic Heap

H2020 AnDy [March 2019 – Feb. 2022]

- Advancing Anticipatory Behaviors in Dyadic Human-Robot Collaboration
- Role: member of the Inria team
- Other partners: Italian Institute of Technology (Coordinator, Italy), Instituto Nazionale Assicurazione contro gli Infortuni sul Lavoro (Italy), Institut Jožef Stefan (Slovenia), Deutsches Zentrum für Luft-und Raumfahrt (DLR, Germany), Xsens Technologies (Netherlands), IMK automotive GmbH (Germany), Otto Bock HealthCare GmbH (Germany)m AnyBody Technology (Denmark)
- 582 k€ for Inria
- http://www.andy-project.eu

EvoNeuro (ANR DEFI) [Dec. 2009 – Jul. 2013] ANR-09-EMER-005-01/02

- The EvoNeuro project aims at cross-fertilizing evolutionary robotics, neuro-evolution, and computational neurosciences.
- Role: member of the ISIR team (co-PI)
- Partners: ISIR (UPMC), Neurobiologie des Processus Adaptatifs (UPMC)
- 580 k € (290 k € for ISIR)
- http://pages.isir.upmc.fr/EvoNeuro/

SUPERVISION

Post-doctoral students

2018–2022 Glenn Maguire – learning reflexes for safer and better reinforcement learning

- Funding: DARPA
- Supervision rate: 100%

Jan. 2016–May 2018. Jonathan Spitz – Bridging the gap between whole body control and data-efficient reinforcement learning

- Funding: Lorraine region
- Supervision rate: 70% (with Karim Bouyarmane and Serena Ivaldi)
- Now researcher in artificial intelligence at Bosch (Germany)

Dec. 2015–May 2018. Vassilis Vassiliades – Mapping the elites of a search space

- Funding: ERC ResiBots
- Supervision rate: 100%
- Now team leader at the University of Cyprus

Nov. 2013–Feb.2015: Danesh Tarapore – Evolvability and creative adaptation.

- Funding: ANR (Agence Nationale pour la Recherche)
- Supervision rate: 100%

- Now lecturer at the University of Southampton (UK)

PhD students

2020–... Timothée Anne — Whole-body damage recovery for humanoid robots
- Funding: École Normale Supérieure

2019–...Yoann Fleytoux — Human-guided manipulation learning of irregular objects
- Co-advisor: Serena Ivadi, Inria (JBM: 50%, SI: 50%)
- Funding: Chist-Era HEAP

2019–2022 Luigi Penco — Intelligent whole-body tele-operation
- Co-advisor: Serena Ivadi, Inria (JBM: 50%, SI: 50%) item
- Funding: H2020 AnDy

2018–2022 Vladislav Tempez — Learning to fly a micro-UAVs in confined environments
- Co-advisor: Franck Ruffier, CNRS (JBM: 60%, FR: 40%)
- Funding: École Normale Supérieure

2019–2021 Waldez Azevedo Gomes Junior — Intelligent Human-Robot collaboration
- Co-advisor: Serena Ivadi, Inria (JBM: 50%, SI: 50%)
- Funding: H2020 AnDy

2017–2020 Adam Gaier — Surrogate-based illumination for aerodynamics
- Co-advisor: Alexander Asteroth (Bonn-Rhein-Sieg University of Applied Sciences) (JBM: 50%, AA: 50%)
- Funding: DFG
- Awards:
  - 2021 ACM SIGEVO Dissertation Award (honorable mention)
  - Best paper, GECCO 2018, Complex Systems track
  - Best paper, GECCO 2017, Complex Systems track
  - Best student paper, 18th AIAA/ISSMO Multidisciplinary Analysis and Optimization Conference

2016–2020: Rituraj Kaushik – Faster damage recovery by trial and error
- Funding: ERC ResiBots

2015–2018: Konstantinos Chatzilygeroudis – Micro-Data Reinforcement Learning for Adaptive Robots
- Funding: ERC ResiBots
- PhD defended on the 14th of December, 2018
- Now post-doctoral researcher at École Polytechnique Féderale de Lausanne (EPFL)

2012–2015 Antoine Cully – Creative adaptation for damage recovery
- Awards:
  - PhD award from the Direction Generale de l'Armement (DGA), 2017
  - PhD award 2016 of the French association for Artificial Intelligence (AFIA)
  - Accessit of the Gilles Kahn 2016 award, by the French society for computer science (SiF)
- Co-advisor: S. Doncieux (JBM: 90%, SD: 10%)
- Funding: UPMC/DGA scholarship (EDITE)
- PhD defended on the 21st of December 2015
- Now lecturer at Imperial College (London, UK)

2008–2012: Paul Tonelli – On the relationships between generative encodings and synaptic plasticity in neuro-evolution (*Relations entre plasticité synaptique et régularité des codages en neuro-évolution*)
- Co-advisor: S. Doncieux (JBM: 75%, SD: 25%)
- Funding: scholarship from the Monaco principality
- PhD defended on the 25th of June, 2012
- Now system architect at Heuritech (start-up)

- Awards:
  - Best paper, GECCO 2011, Generative and Developmental Systems track

2008–2011: Sylvain Koos – The transferability: a general approach to cross the reality gap, to generalize in machine learning, and to behavior adaptation in robotics (*L'approche par transférabilité : une réponse aux problèmes de passage à la réalité, de généralisation et d'adaptation*).

- Co-advisor: S. Doncieux (JBM: 50%, SD: 50%)
- funding: French ministry of research scholarship (EDITE)
- PhD defended on the 30th of November, 2011
- Now research engineer at Heuritech (startup)

Research engineers

2019–...: Eloise Dalin – Support the ResiBots research; funding: ERC ResiBots
2017–...: Lucien Renaud – Mechanical design; funding: Inria (ADT) & ERC ResiBots
2020–2022: Ivan Bergonzani – Whole-body control of Talos; funding: ERC ResiBots + Inria
2019–2021: Pierre Desreumaux – Support the ResiBots research; funding: ERC ResiBots
2017–2019: Brice Clément (co-supervision with S. Ivaldi and K. Bouyarmane) – QP-based whole-bpdy control of the iCub robot; funding: Inria (ADT)
2015–2019: Dorian Goepp – Mechanical and software design of robots; funding: ERC ResiBots
2013–2014: Jean-Marie Jehanno – Mechanical design of a wheel-legged hybrid robot; funding: ANR (Agence Nationale pour la Recherche)

PROFESSIONAL ACTIVITIES

Organization of international conferences

GECCO'2019 (about 500 participants / 80+ papers submitted to the track) Co-chair of the "Evolutionary Machine Learning' track (with Bing Xue, University of Wellington, NZ) – track chairs are responsible of the review process (handling reviews and taking the acceptance decisions).
GECCO'2015 (about 500 participants) Co-chair of the "Generative and Developmental Systems" track (with Sebastian Risi, IT University of Copenhagen, DK) – track chairs are responsible of the review process (handling reviews and taking the acceptance decisions).
CLAWAR'2011 (about 130 participants) The 14th International Conference on Climbing and Walking Robots and the Support Technologies for Mobile Machines, Paris, France (local co-organizer)
SAB'2010 (about 150 participants) The 11th conference on Simulation of Adaptive Behavior: From animals to animats, Paris, France (local co-organizer)

Organization of international workshops

At IROS 2017 (Vancouver, USA) *Micro-data learning: the next frontier of robot learning?* (about 80 participants, co-organizers: F. Stulp, S. Calinon)
At ALIFE/ECAL 2012 to 2017 (2012: East Lansing, MI, USA, 2013: Taormina, Italy, 2014: New York, USA; 2015: York, UK; 2017: Lyon, France) *Evolution of physical systems* (about 40 participants, co-organizers: J. Rieffel, N. Bredeche, E. Haasdijk)
At CNS 2012 (Atlanta, USA) *Modern evolutionary algorithms in computational neuroscience: tools to parametrize, explore model properties and design model structures* (about 50 participants, co-organizers: B. Girard, S. Doncieux, D. Sheynikhovich)
At GECCO 2012 (Philadelphia, USA) *Evolutionary Developmental Robotics: EvoDevoRobo* (about 60 participants, co-organizers: S. Doncieux, Y. Jin)

At IROS 2009 (Saint-Louis, USA) *Exploring New Horizons in Evolutionary Design of Robots* (about 40 participants, co-organizers: S. Doncieux, N. Bredeche, proceedings published as a Springer book)

Guest editor for special issues

2017 Artificial Life (MIT Press). *Evolution in Physical Systems* (with J. Rieffel, N. Bredeche, E. Haasdijk)

Tutorials

GECCO 2018-2022 [3 hours] Quality Diversity Optimization (with A. Cully and S. Doncieux)
ALIFE'2014, ECAL 2015 & GECCO 2015-2019 [3 hours] Evolutionary Robotics (with S. Doncieux and N. Bredeche)
ALIFE'2014 [3 hours] Creating publication-quality figures with Python and Matplotlib (https://github.com/jbmouret/matplotlib_for_papers)

Others

2015-2017 Chair of the "evo-devo-robot" task force of the IEEE technical committee "Developmental and Cognitive Systems".

Program committee member

GECCO (about 500 participants, acceptance rate: about 35%) and ALIFE (about 500 participants, acceptance for oral presentations: about 25%) are the two main conferences about artificial evolution. CoRL is the only conference dedicated to learning.
Conference on Robot Learning (CoRL) (since 2017, area chair 2022) **Genetic and Evolutionary Computation Conference** (GECCO, since 2010)
European Conference on Artificial Life (ECAL) (since 2015)
Artificial Life (ALIFE) (since 2014)
Simulation of Adaptive Behavior (SAB) (since 2010)
European Conference on the Applications of Evolutionary Computation (Evo*, since 2013)
International conference on Artificial Evolution (EA, 2009, 2010)
International Conference on Climbing and Walking Robots and the Support Technologies for Mobile Machines (CLAWAR 2011)

PhD committees

2022 Alexandre Letalenet (supervised by P. Morin), Sorbonne University. Role: reviewwer.
2021 Maxime Thomas (supervised by P. Le Masson et de B. Weil), Mines Paritech. Role: examiner.
2021 Giuseppe Paolo (supervised by S. Doncieux and Alban Laflaquière), Sorbonne University. Role: reviewer.
2021 Nemanja Rakicevik (supervised by Petar Kormushev), Imperial College. Role: external examiner/reviewer.
2021 Hugo Caselles-Dupré (supervised by David Filliat and Mickael Garcia-Ortiz.), ENSTA. Role: reviewer.
2020 Noémie Jaquier (supervised by Sylvain Calinon), EPFL. Role: reviewer.
2019 Christophe Reymann (Supervised by Simon Lacroix), INSA Toulouse/LAAS. *Observation missions with UAVs: defining and learning models for active perception and proposition of an architecture enabling repeatable distributed simulations*. Role: reviewer.
2019 Daniele Gravina (supervised by Georgios N, Yannakakis), University of Malta. *Searching for the Unexpected: Evolution through Surprise*. Role: reviewer.

2018 Valerio Modugno (supervised by G. Oriolo), University de la Sapienza (Italy). Role: reviewer.
2017 Charles Rocabert (supervised by G. Beslon & C. Knibbe), INSA Lyon. *Etude de l'évolution des micro-organismes bactériens par des approches de modélisation et de simulation informatique*. Role: president of the committee.
2015 Fabien Benureau (supervised by P.-Y. Oudeyer), Bordeaux University. *Self-Exploration of Sensorimotor Spaces in Robots*. Role: external examiner.
2014 Adam Davies (supervised by Richard Watson), University of Southampton. *On the interaction of function, constraint and complexity in evolutionary systems*. Role: external examiner and reviewer.

Teaching activities

2008-2014 Full load of teaching (192+ hours/year) for master students in robotics (Polytech'Paris-UPMC); about 30% of classic classes and 70% of hands-on classes; topics:

- artificial intelligence for robotics
- object oriented programming
- C++ programming
- C programming
- Unix system programming
- supervision of student projects in robotics, electronics, and computer science

About 2 master students per year do their master thesis / internship in the lab.

PUBLICATION LIST

All my publications can be downloaded on: http://members.loria.fr/JBMouret/publications.html
Videos for many papers: http://members.loria.fr/JBMouret/videos.html
Google scholar page: http://scholar.google.fr/citations?user=lp8V_UYAAAAJ&hl=en&oi=ao

In my field, the last author is the "senior author" who supervised the work (and might have contributed significantly); the first author is most often the PhD student or post-doc who performed the experiments.

Pre-prints

[1] L. Penco, J.-B. Mouret, and S. Ivaldi. "Prescient teleoperation of humanoid robots". In: *arXiv preprint arXiv:2107.01281* (2021).

[2] J.-B. Mouret and J. Clune. "Illuminating search spaces by mapping elites". In: *arXiv preprint* (2015). URL: http://arxiv.org/abs/1504.04909.

International, peer-reviewed journals

[1] T. Anne, E. Dalin, I. Bergonzani, S. Ivaldi, and J.-B. Mouret. "First do not fall: learning to exploit a wall with a damaged humanoid robot". In: *IEEE Robotics and Automation Letters* (2022). URL: https://arxiv.org/abs/2203.00316.

[2] W. Gomes, P. Maurice, E. Dalin, J.-B. Mouret, and S. Ivaldi. "Multi-objective Trajectory Optimization to Improve Ergonomics in Human Motion". In: *IEEE Robotics and Automation Letters* (2022). URL: https://hal.archives-ouvertes.fr/hal-03281827.

[3] P. Laclau, V. Tempez, F. Ruffier, E. Natalizio, and J.-B. Mouret. "Signal-Based Self-Organization of a Chain of UAVs for Subterranean Exploration". In: *Frontiers in Robotics and AI* 8 (Apr. 2021). DOI: 10.3389/frobt.2021.614206. URL: https://hal.inria.fr/hal-03209269.

[4] L. Vianello, J.-B. Mouret, E. Dalin, A. Aubry, and S. Ivaldi. "Human posture prediction during physical human-robot interaction". In: *IEEE Robotics and Automation Letters* 6.3 (July 2021), pp. 6046–6053. DOI: 10.1109/LRA.2021.3086666. URL: https://hal.archives-ouvertes.fr/hal-03115242.

[5] K. Chatzilygeroudis, V. Vassiliades, F. Stulp, S. Calinon, and J.-B. Mouret. "A survey on policy search algorithms for learning robot controllers in a handful of trials". In: *IEEE Transactions on Robotics* (2020). URL: https://arxiv.org/abs/1807.02303.

[6] R. Kaushik, P. Desreumaux, and J.-B. Mouret. "Adaptive Prior Selection for Repertoire-based Online Learning in Robotics". In: *Frontiers in Robotics and AI* (2020). URL: https://arxiv.org/abs/1907.07029.

[7] J. Lehman et al. "The surprising creativity of digital evolution: A collection of anecdotes from the evolutionary computation and artificial life research communities". In: *Artificial Life* (2020). URL: https://arxiv.org/abs/1803.03453.

[8] J.-B. Mouret. "Evolving the behavior of machines: from micro to macroevolution". In: *iScience* (2020), p. 101731.

[9] S. Paul, K. Chatzilygeroudis, K. Ciosek, J.-B. Mouret, M. A. Osborne, and S. Whiteson. "Robust Reinforcement Learning with Bayesian Optimisation and Quadrature". In: *Journal of Machine Learning Research* 21 (2020), pp. 1–31. URL: https://hal.inria.fr/hal-02943567.

[10] L. Penco, E. M. Hoffman, V. Modugno, W. Gomes, J.-B. Mouret, and S. Ivaldi. "Learning Robust Task Priorities and Gains for Control of Redundant Robots". In: *IEEE Robotics and Automation Letters* (2020). URL: https://hal.inria.fr/hal-02456663.

[11] D. Howard, A. E. Eiben, D. F. Kennedy, J.-B. Mouret, P. Valencia, and D. Winkler. "Evolving embodied intelligence from materials to machines". In: *Nature Machine Intelligence* 1.1 (2019), p. 12. URL: https://arxiv.org/abs/1901.05704.

[12] A. Cully, K. Chatzilygeroudis, F. Allocati, and J.-B. Mouret. "Limbo: A Flexible High-performance Library for Gaussian Processes modeling and Data-Efficient Optimization". In: *The Journal of Open Source Software* 3.26 (2018), p. 545. DOI: 10.21105/joss.00545.

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