Mihai Andries **Curriculum vitæ (February 13, 2019)**

CONTACT INFORMATION

mihai@andries.eu
http://mihai.andries.eu
LinkedIn profile
Google Scholar profile
Gitlab profile

RESEARCH INTERESTS

Automated design, cognitive robotics, machine learning, cognitive architectures, logic and automated reasoning, autonomous intelligent systems, ambient intelligence, sustainable economics and optimal governance systems, logic and law.

EDUCATION

Ph.D. in Computer Science, Artificial Intelligence **Oct 2012 – Dec 2015**
Université de Lorraine, Nancy, France

Master in Computer Science **Sept 2010 – Sept 2012**
Software and Information Engineering
Université de Strasbourg, Strasbourg, France

Licence (B.Sc.) in Computer Science **Sept 2007 – June 2010**
Université de Strasbourg, Strasbourg, France

PROFESSIONAL EXPERIENCE

Postdoctoral researcher **Apr 2017 – present**
Institute for Systems and Robotics (ISR-Lisboa)
Instituto Superior Técnico (IST), Universidade de Lisboa, Lisbon, Portugal
Advisor: José Santos-Victor, Full Professor (IST)

- Research on automatic generation of 3D models of objects that satisfy functional requirements.
- Research in cognitive robotics on autonomous learning of cause-effect relationships by humanoid robots (affordance learning), combining 3D computer vision, manipulator control, and unsupervised learning using artificial neural networks.
- Drafted and submitted national (FCT) and European (H2020) research project proposals (both individual and team projects).

Founder **Mar 2017 – present**
Andries Labs S.R.L., Chișinău, Moldova

- Development of **jurnyz.com**, a traveller-oriented website for keeping a log of journeys and sharing it with friends.

Postdoctoral researcher **Jan–Dec 2016**
CNRS, Institute for Intelligent Systems and Robotics (ISIR)
Université Pierre-et-Marie-Curie (Paris VI), Paris, France
Advisor: Raja Chatila, Directeur de recherche (CNRS)

Project: *RoboErgoSum*, French National Research Agency (ANR)

- Research on cognitive architectures for perception, learning, reasoning and action planning.
- Research on perception and knowledge grounding in robotics.
- Supervision of a PhD student working on Planning in Artificial Intelligence.

Project: *Spencer*, European Research Project (FP7-ICT-2011-9) Cognitive Systems and Robotics

- Research on social robotics, focusing on group detection in densely populated environments.

Doctoral Researcher **Oct 2012 – Dec 2015**
Inria — French National Institute for Research in Computer Science and Control
Autonomous intelligent machines (MAIA) and LARSEN teams, Nancy, France
Thesis: *Object and human tracking, and robot control through a load sensing floor*
Advisors: François Charpillet, Directeur de recherche (Inria)
Olivier Simonin, Professor of Computer Science (INSA Lyon, France)

- Research on ambient intelligence (distributed sensor networks) applied to healthcare (elderly care).
- Research on robotic navigation in environments with omnipresent ground pressure sensors.

Research Intern **Feb 2012 – July 2012**
Inria, Autonomous intelligent machines team (MAIA), Nancy, France
Supervisor: François Charpillet, Directeur de recherche (Inria)

Project: *Cartography of a territory by a robot (CAROTTE)*, national joint project of the French National Research Agency (ANR) and the French General Directorate for Armament (DGA)

- Drew up a state-of-the-art and analysed existing multi-agent exploration algorithms. Developed a new multi-agent ant algorithm for graph exploration, using which agents are able to identify exploration completion and to return to a rendez-vous point (applicable in practice for 2D and 3D robotic exploration of structured environments).

Software R&D Intern **Sept 2010 – Jan 2012**
PSA Peugeot Citroën
Telematics Architecture and Software Specification team, Sochaux, France

- Participated in the development of a methodology for designing UML/SysML models of software architectures for vehicles. The elaborated target-generic model designs were then used for automatic code generation for specific target platforms.
- Developed and implemented additional networking functionalities for a Controller Area Network (CAN) driver, required for connecting real and simulated car components.

Teaching experience

Qualification Maître de Conférences (France) **Feb 2017 – Dec 2021**
Section 27 - Computer Science

Teaching assistant at TELECOM Nancy **Oct 2012 – Sep 2014**

- 2013–2014: Artificial Intelligence
  Class taught by Dr. Laurent Bougrain.
- 2013–2014: Graphs and Operational Research
  Class taught by Dr. Jean-François Scheid.
- 2013–2014: Techniques and Tools for Programming
  Class taught by Pr. Martin Quinson.
- 2012–2013: Techniques and Tools for Programming
  Class taught by Dr. Abdelkader Lahmadi.
- 2012–2013: Compilation
  Class taught by Dr. Suzanne Collin.

Administrative experience

Organiser of the Journal Club **Mar–Dec 2016**
weekly sessions for presenting and discussing scientific publications in the Institute for Intelligent Systems and Robotics (ISIR) laboratory (Paris, France)

Elected representative **Mar–Dec 2015**
of doctoral researchers, post-docs, contract engineers and contract researchers in the LORIA laboratory council (Nancy, France)

Appointed representative **Jan–Dec 2015**
of doctoral researchers, post-docs, contract engineers and contract researchers in the council of the Inria Nancy research center (Nancy, France)

Volunteering experience

Communication officer **(Apr 2017 – present)**
MentorMe mentorship programme for Moldovan high-school graduates and undergraduate university students seeking to pursue their university education abroad.

Programme manager **(Mar 2016 – Mar 2017)**
MentorMe mentorship programme

- Drafting the specification for the MentorMe online platform
- Fundraising: jointly preparing and submitting grant proposals to national funding organisms (e.g. Biroul Relații cu Diaspora)
- Community management: processing join/leave requests from members
- Activity reporting to the founder of the mentorship programme
- Team management (3 volunteers: operations, communication, fundraising)

Software developer **(Aug 2010)**
On-line dictionary of library science terminology
Designed and developed the software for an on-line dictionary of library science terminology for the National Library of the Republic of Moldova

Software skills

Programming languages: Python, Java, C, C++, OCaml, Pascal, assembly
Scientific software: LaTeX, gnuplot, Maple, MPI, CUDA
Machine Learning software: TensorFlow, Octave
Robotics software: ROS, YARP
Software and Systems Modeling: UML, SysML, Enterprise Architect, Atego Artisan Studio, IBM Rational Rhapsody, Qt
Software Verification: Coq theorem prover, Frama-C
Compilation: Lex, Yacc, ANTLR
Databases: SQL, PL/SQL
Web Development: HTML, CSS, JavaScript, PHP

Language skills

English: fluent (IELTS overall band score: 8/9, September 2011)
French: fluent (DALF C1, 2006)
Romanian: native speaker
Russian: native speaker
Italian: intermediate
Portuguese: beginner

Work in progress

[1] Automatic generation of object shapes with desired functionalities
Mihai Andries, Atabak Dehban, José Santos-Victor
(draft available on arXiv)

Refereed journal publications

[2] Toward Self-Aware Robots
Raja Chatila, Erwan Renaudo, Mihai Andries, Ricardo Omar Chavez-Garcia, Pierre Luce-Vayrac, Raphaël Gottstein, Rachid Alami, Aurélie Clodic, Sandra Devin, Benoît Girard, Mehdi Khamassi
Frontiers in Robotics and AI, 2018

[3] Affordance equivalences in robotics: a formalism
Mihai Andries, Ricardo Omar Chavez-Garcia, Raja Chatila, Alessandro Giusti, Luca M. Gambardella
Frontiers in Neurorobotics, 2018

[4] Localisation of humans, objects and robots interacting on load-sensing floors
Mihai Andries, François Charpillet, Olivier Simonin
IEEE Sensors Journal, 2016

Conference publications

[5] Discovering and Manipulating Affordances
Ricardo Omar Chavez-Garcia, Mihai Andries, Pierre Luce-Vayrac, Raja Chatila
International Symposium on Experimental Robotics (ISER 2016)

[6] Modeling the dynamics of individual behaviors for group detection in dynamic crowds using low-level features
Omar Adair Islas Ramírez, Giovanna Varni, Mihai Andries, Mohamed Chetouani, Raja Chatila
IEEE International Symposium on Robot and Human Interactive Communication (RO-MAN 2016)
* Best paper nominee, Technical Category

[7] Probabilistic sensor data processing for robot localisation on load-sensing floors
Maxime Rio, Francis Colas, Mihai Andries, François Charpillet
Proceedings of IEEE/RSJ International Conference on Intelligent Robots and Systems (ICRA 2016)

[8] Multi-robot taboo-list exploration of unknown structured environments
Mihai Andries, François Charpillet
Proceedings of IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS 2015)

[9] High resolution pressure sensing using sub-pixel shifts on low resolution load-sensing tiles
Mihai Andries, François Charpillet, Olivier Simonin
Proceedings of IEEE International Conference on Robotics and Automation (ICRA 2015)

[10] Multi-robot exploration of unknown environments with identification of exploration completion and post-exploration rendez-vous using ant algorithms
Mihai Andries, François Charpillet
Proceedings of IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS 2013)

Workshop publications

[11] From Perception and Manipulation to Affordance Formalization
Ricardo Omar Chavez-Garcia, Mihai Andries, Pierre Luce-Vayrac, Raja Chatila
Workshop on Machine Learning Methods for High-Level Cognitive Capabilities in Robotics (ML-HLCR at IROS 2016)

[12] High resolution pressure sensing using sub-pixel shifts on low resolution load-sensing tiles
Mihai Andries, François Charpillet, Olivier Simonin
Workshop "Get in touch!" Tactile & force sensing for autonomous, compliant, intelligent robots (at ICRA 2015)

Thesis

[13] *Object and human tracking, and robot control through a load sensing floor*
Mihai Andries, Ph.D. thesis, Université de Lorraine (2015)

Scientific presentations

- Ciência 2018 — Science and Technology Summit in Portugal
  Lisbon Congress Center, Lisbon, Portugal, 2-4 July 2018
  Poster: *Automatic generation of object shapes with desired functionalities*

- Associate Laboratory of Robotics and Engineering Systems (LARSyS) seminar
  Pavilhão do conhecimento, Lisbon, Portugal, 14-15 June 2018
  Topic: *Automatic generation of object shapes with desired functionalities*

- Instituto de Sistemas e Robótica, Instituto Superior Técnico
  Lisbon, Portugal, 19 December 2016
  Topic: *Affordance learning for knowledge grounding*

- Personally Assisted Living workshop (2014)
  Inria Bordeaux Sud-Ouest, Bordeaux, France, 9–10 July 2014
  Topic: *Detection, tracking and recognition of objects using a load-sensing floor*

- Personally Assisted Living workshop (2013)
  Inria Rennes - Bretagne Atlantique, Rennes, France, 10–12 July 2013
  Topic: *Contribution à l'évaluation de la fragilité chez la personne âgée par un système de dalles intelligentes et un réseau de cameras Kinect* (presented together with Abdallah Dib)

- University of Freiburg, Freiburg im Breisgau, Germany, 4 May 2012
  Autonomous Intelligent Systems laboratory
  Topic: *Coverage of an unknown structured environment by a set of robots: from ants to frontier-exploration methods*

Dissemination of scientific knowledge

- MentorMe interview (viewed by 1910 people on Facebook as of 10 February 2019) about my education, career path, and current research in cognitive robotics (in Romanian)
- Renaissance Nancy
  Scientific vulgarisation event organised by the municipal administration
  Represented the MAIA research team at its exhibition stand (3 days)
  Nancy, France, May 2013

Winter and Summer schools attended

- International Winter School on Humanoid Robot Programming (6–15 February 2018, Santa Margherita Ligure, Genoa, Italy)
- Summer School on Law and Logic (13–18 July 2015, Florence, Italy)
- Global Young Scientists Summit (18–23 January 2015, Singapore)
- Advanced Course on Artificial Intelligence (*ACAI 2011*): summer school on Automated Planning and Scheduling (7–10 June 2011, Freiburg im Breisgau, Germany)

Online courses attended

- *Control of Mobile Robots*, online course provided by Georgia Institute of Technology on Coursera (Feb 2019)
- *Machine Learning*, online course provided by Stanford University on Coursera (Jan–Feb 2017)
- *Philosophy and the Sciences*, online course provided by the University of Edinburgh on Coursera (Oct–Dec 2014)
- *Introduction to Philosophy*, online course provided by the University of Edinburgh on Coursera (Jan–Mar 2013)
- *Introduction to Artificial Intelligence (advanced track)*, online course given by Prof. Sebastian Thrun and Prof. Peter Norvig (Oct–Dec 2011)

Professional service

Reviewing for research funding institutions

- Agence Nationale de la Recherche (France)
  Reviewed for ANR in 2017

Reviewing for scientific journals

- Adaptive Behavior (2018, 2019)
- Sensors & Actuators (2018)
- Autonomous Robotics (2017)
- IEEE Transactions on Robotics (2015, 2017)
- Robotics and Autonomous Systems (2014)

Reviewing for scientific conferences

- IEEE International Conference on Robotics and Automation (ICRA)
  Reviewed for ICRA 2017, 2018
- IEEE/RSJ International Conference on Intelligent Robots (IROS)
  Reviewed for IROS 2015, 2017

Awards and Distinctions

- Face the robot challenge (placed 4-28 out of 58 submissions)
  Prize: 200 euro, for the entry *Browey* (in collaboration with Hugo Simão)
  Organised by the Honda Research Institute Europe (2017.10.22)
- Selected to participate in the Research Opportunities Week (ROW) at the Technical University of Munich (TUM) (20-24 March 2017)
- Best Paper Nominee, Technical Category (top 5%), RO-MAN 2016
  "Modeling the dynamics of individual behaviors for group detection in dynamic crowds using low-level features."
- Award for Academic Excellence for Moldavian students studying abroad (Doctorate level), Government of the Republic of Moldova (*Gala studenților originari din Republica Moldova, 2015*)
- Selected as an Inria representative for the Global Young Scientists Summit 2015 (18-23 January 2015, Singapore)

Awarded grants

- NVIDIA GPU grant: Titan Xp GPU (value: $1200, 12 February 2018)
  (together with Atabak Dehban and Prof. José Santos-Victor)
- Fundação para a Ciência e Tecnologia (FCT) postdoctoral research grant (Portugal, 2017.04–present)
- Inria CORDI-S doctoral research grant (France, 2012.10–2015.10)
- ECCAI 2012 travel grant
- IJCAI 2011 travel grant
- ECCAI 2011 travel grant

Memberships

- Member of the IEEE Technical Committee on Cognitive Robotics — IEEE Robotics and Automation Society (since May 2016)
- French Association for Artificial Intelligence (AFIA, 2011–2015)

References

Prof. José Santos-Victor (jasv@isr.tecnico.ulisboa.pt; ☎ +351.21.84.18.294)

- Full Professor
  Institute for Systems and Robotics (ISR)
  Instituto Superior Técnico, Lisbon, Portugal

⋆ *Prof. Santos-Victor has been both my supervisor and director of the laboratory during my post-doc at ISR.*

Prof. Raja Chatila (chatila@isir.upmc.fr; ☎ +33.1.44.27.28.76)

- Director of research,
  Institute for Intelligent Systems and Robotics (ISIR)
  Sorbonne Université, Paris, France

⋆ *D.R. Chatila was both my supervisor and director of the laboratory during my post-doc at ISIR.*

Dr. François Charpillet (francois.charpillet@inria.fr; ☎ +33.3.83.59.30.00)

- Director of research,
  Life-long Autonomy and interaction skills for Robots in a Sensing ENvironment (LARSEN) team
  Inria — French National Institute for Research in Computer Science and Control
  Vandoeuvre-lès-Nancy, France

⋆ *Dr. Charpillet was my Ph.D. supervisor.*