

# Hang Yin

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*Robot Learning · Human-Robot Interaction · Artificial Intelligence*

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## Education

- 2012–2018 **PhD, EPFL and IST, University of Lisbon.**  
Thesis: Incorporating Human Expertise in Robot Motion Learning and Synthesis  
Supervisors: Prof. Aude Billard, Prof. Ana Paiva and Prof. Francisco S. Melo
- 2007–2010 **Master in Mechatronics, Shanghai Jiao Tong University.**  
Thesis: Locomotion of LOCH Humanoid: Dynamical Simulation, Gait Planning and Interactive Operation
- 2003–2007 **Bachelors in Mechanical Engineering and Computer Engineering (Minor), Shanghai Jiao Tong University.**

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## Professional Experience

- 2012–2018 **LASA, EPFL; GAIPS, IST, University of Lisbon and INESC-ID.**  
**Doctoral Assistant:**
  - CoWriter: research of machine learning algorithm and motor control modules for robot-assisted children handwriting tutoring.
  - NCCR PbD of fine manipulation: research of probabilistic imitation learning and optimal control for compliant motion learning.
  - AMIGOS: research of deep generative model for skill learning from demonstrated examples.
- 2010–2012 **SIEMENS Industry Software Ltd., Shanghai.**  
**Software Engineer:**
  - Development and maintenance of knowledge fusion modules in Unigraphics NX for automating the sketch of ship building.
  - Assisting in the communication with customers from shipyards on the product design.
- 2009–2010 **Nanyang Technological University.**  
**Project Officer:** development on locomotion planning and dynamical simulation of an adult-sized humanoid robot.

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## Publications

- 2018 **H. Yin**, F. Melo, A. Billard and A. Paiva, *Boosting Robot Learning and Control with Domain Constraints* In Proceedings of Robotics: Science and Systems (RSS), RSS Pioneer Workshop, Pittsburg, USA [**RSS, Rank: A\*(CORE2017)**]
- 2018 **H. Yin**, F. Melo, A. Paiva and A. Billard, *An Ensemble Inverse Optimal Control Approach for Robotic Task Learning and Adaptation*, Autonomous Robots [**AURO, IF2016: 2.706**]
- 2018 S. Chandra, R. Paradedda, **H. Yin**, P. Dillenbourg, R. Prada and A. Paiva, *Do Children Perceive Whether a Robotic Peer is Learning or Not*, In Proceedings of the ACM/IEEE International Conference on Human-Robot Interaction (HRI), Chicago, USA [**HRI, Rank: A2(Qualis)**]

- 2017 S. Chandra, R. Paradedda, **H. Yin**, P. Dillenbourg, R. Prada and A. Paiva, *Affect of robot's competencies on children's perception*, In Proceedings of the International Conference on Autonomous Agents and MultiAgent Systems (AAMAS), São Paulo, Brazil [**AAMAS, Rank: A1(Qualis)**]
- 2017 **H. Yin**, F. Melo, A. Billard and A. Paiva, *Associate Latent Encodings in Learning from Demonstrations*, In Proceedings of The Thirty-First AAAI Conference on Artificial Intelligence (AAAI), San Francisco, USA [**AAAI, Rank: A1(Qualis)**]
- 2016 **H. Yin**, P. Alves-Oliveira, F. Melo, A. Billard and A. Paiva, *Synthesizing Robotic Handwriting Motion by Learning from Human Demonstrations*, In Proceedings of International Joint Conference on Artificial Intelligence (IJCAI), New York, USA [**IJCAI, Rank: A1(Qualis)**]
- 2015 **H. Yin**, A. Billard and A. Paiva, *Bidirectional Learning of Handwriting Skill in Human Robot Interaction*, In Proceedings of the ACM/IEEE International Conference on Human-Robot Interaction (HRI), HRI-Pioneer Workshop, Portland, USA [**HRI, Rank: A2(Qualis)**]
- 2014 **H. Yin**, A. Paiva and A. Billard, *Learning Cost Function and Trajectory for Robotic Writing Motion*, In Proceedings of the IEEE-RAS International Conference on Humanoid Robots (HUMANOIDS), Madrid, Spain [**HUMANOIDS, Rank: B2(Qualis)**]
- 2014 M. Li, **H. Yin**, K. Tahara and A. Billard, *Learning Object-level Impedance Control for Robust Grasping and Dexterous Manipulation*, In Proceedings of the IEEE International Conference on Robotics and Automation (ICRA), Hong Kong, China [**ICRA, Rank: A1(Qualis)**]
- 2010 **H. Yin**, Y. H. Yan, *Design of a Humanoid Robot Simulation Platform Based on MRDS*, Journal of Shanghai Jiao Tong University
- 2010 Y. H. Yan, D. G. Chen, **H. Yin**, *Optics-based Motion Measurement for a Catheter Navigation System: A Novel and Low Cost System*, Springer's Lecture Notes in Computer Science
- 2010 G. Q. Zhang, M. Xie, **H. Yin**, L. Wang, H. J. Yang, *Planning and Control of Biped Walking along Curved Paths on Unknown and Uneven Terrain*, Springer's Lecture Notes in Artificial Intelligence

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## Academic Activities

- 2015-2017 Reviewers for conferences and journals including IROS, ICRA, HUMANOIDS, RSS, CoRL, AAAI, HRI, ROMAN, ICSR, AI-HRI, IEEE Robotics and Automation Letters, IEEE Robotics & Automation Magazine and International Journal of Social Robotics.

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## Talks

- Dec 2017 Invited talk at Wuhan University and Cobot Corp., China.
- Feb 2017 Oral presentation at AAAI, San Francisco, USA.
- July 2016 Oral presentation at IJCAI, New York, USA.
- Nov 2014 Oral presentation at Humanoids, Madrid, Spain.

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## Honors and Awards

- 2012 IST-EPFL Joint Doctoral Initiative Fellowship
- 2010 Excellent Master Thesis Award of Shanghai Jiao Tong University
- 2003-2007 Excellent Academic Scholarships and Student Award of Shanghai Jiao Tong University

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## Skills

### Technical Knowledge

- Robotics** Expert with experience on kinematics, dynamics, motion planning and control of articulated manipulators; Research experience and knowledge on human-robot interaction and collaboration; Hands on experience on sensory filtering and vision.
- Machine Learning** Expert knowledge and experience on a range of classification, regression and (inverse) reinforcement learning algorithms. Research experience on probabilistic inference and deep learning.
- Mechanical Design** Expert and developer on CAD software for mechanical part analysis and design.

### Programming Languages and Libraries

- C/C++** Experience on developing large-scale commercial software, robot control algorithms and sensory modules in embedded systems.
- Python** Experience on scientific computing, data processing and machine learning algorithms.
- Robotics Libraries** Experience on ROS/YARP/KDL/OpenRAVE/Gazebo for implementing algorithms and control on various robots: KUKA LWR/IIWA/iCub/Nao/Baxter/Allegro Hand.
- Machine Learning Libraries** Experience on researching and developing algorithms with Scikit-Learn and Tensorflow. Experience on PyTorch for side projects.
- Misc** Matlab,  $\text{\LaTeX}$ , OpenCV, IpOpt, autograd, Eigen, Qt, Kivy.