Smail Ait Bouhsain

PhD. in Robotics and AI

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22/11/1996 (28 y.o)

STRENGTHS

- Strong background in applied AI and robotics
- Deep knowledge and know-how in machine learning and deep learning
- Advanced experience in Python, C/C++ and Pytorch

EDUCATION

Laboratory for Analysis and Architecture of Systems (LAAS), France **10/2021 - 04/2025**

PhD in Robotics and Computer Science

- **Title : Learning Geometric Reasoning for Multi-Robot Task and Motion Planning (TAMP)**
  - From the Jury's report: "*The thesis offers rich contributions to the TAMP domain [...] by mixing machine learning and planning techniques. Experimental results show that the proposed models outperform state-of-the-art Pick & Place TAMP planning. [...] The jury encourages him to apply for a French or European PhD prize.*"
  - Published 5 articles in top-tier AI and Robotics conferences (ICLR, ECAI, ICRA, IROS)
  - Proposed and supervised a 6-months internship and accumulated 70+ teaching hours at INSA-Toulouse

Swiss Federal Institute of Technology Lausanne (EPFL), Switzerland

Master of Science MSc in Robotics (GPA: 5.2/6) **09/2018 - 04/2021**

- **Major in industrial robotics :** Specialized in Intelligent systems, ML and Deep Learning
- **Minor in Management, Technology and Entrepreneurship:** Specialized in business strategy, project management and logistics

Bachelor of Science BSc in Micro-engineering **09/2014 - 08/2018**

PROFESSIONAL EXPERIENCE

LOGITECH, Lausanne, Switzerland **09/2020 - 03/2021**

Machine Learning Intern - Emotionally Intelligent Peripherals for streamers

- Investigated the problem and a set of solutions based on feedback from 15+ active streamers
- Developed/defended multimodal deep learning solutions to experts from industry and academia
- Achieved state-of-the-art performances outperforming literarture in emotion recognition by 6%
- Demonstrated that multimodality fusion can improve the model's performance by up to 14%

OCP Group, Ben Guerir, Morocco **03/2020 - 08/2020**

Robotics intern - Autonomous Mining Truck Project

- Prevented a shutdown of the project during COVID-19 lockdown by creating a high fidelity simulation of the truck and its environment using ROS
- Coordinated tasks with data science, cartograhy, technical and sales teams (20+ people)
- Developed kinematically constrained trajectory planning (Hybrid A*) and path tracking (NMPC) algorithms
- Advised and trained colleagues on various robotics' topics such as perception, localisation and mapping

SKILLS

Programming	Python | C/C++ | Pytorch | Pandas | Sickit-learn | OpenCV |
ML/Deep Learning	Predictive models | Embodied AI | CNN | GNN | Transformers | LSTMs |
Robotics	Planning | Perception | Control | Signal processing | Sensors |
Software stack	Jupyter | ROS | MATLAB | CATIA (CAD) | Git | Docker |
Professional/Social	Communication | Teamwork | Project management | Public speaking |
Languages	English (C1) | French (C1) | Arabic (C1) | Spanish (A2) |

INTERESTS

Travel (12 countries so far) Guitar (13 years, self-taught) Gaming Movies/TV Shows/Anime

PUBLICATIONS

Pedestrian Intention Prediction: A Multitask Perspective (hEART 2020)
Bouhsain, S.A., Saadatnejad, S. and Alahi, A., 2020. 9th Symposium of the European Association for Research in Transportation (hEART)

Learning to predict action feasibility for task and motion planning in 3D environments (ICRA 2023)
Bouhsain, S.A., Alami, R. and Simeon, T., 2023. In 2023 IEEE International Conference on Robotics and Automation (ICRA).

Simultaneous Action and Grasp Feasibility Prediction for Task and Motion Planning through Multi-Task Learning (IROS 2023)
Bouhsain, S.A., Alami, R. and Simeon, T., 2023. In 2023 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)

Extending Task and Motion Planning with Feasibility Prediction: Towards Multi-Robot Manipulation Planning of Realistic Objects (IROS 2024)
Bouhsain, S.A., Alami, R. and Simeon, T., 2024. In 2023 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)

Learning Uncertainty Tubes via Recurrent Neural Networks for Planning Robust Robot Motions (ECAI 2024)
Bouhsain, S.A., Alami, R. and Simeon, T., 2024. In the 27th European Conference on Artificial Intelligence (ECAI)

Learning Geometric Reasoning Networks For Robot Task And Motion Planning (ICLR 2025)
Bouhsain, S.A., Alami, R. and Simeon, T., 2025. In the Thirteenth International Conference on Learning Representations (ICLR)

EXTRACURRICULAR ACTIVITIES

Ecole technique - Ecole des métiers - Lausanne (ETML) — 07/2017 - 08/2020
Training program in mechanical machining and manufacturing processes
- Learned to use heavy machinery and tools such as lathes, drills and milling machines
- Hand manufacturing of a vice and a clamp while following safety guidelines

Robopoly, EPFL's robotics club — 09/2015 - 06/2017
Communication - logistics manager
- Managed the club's social media presence and design of flyers and posters for its events
- Supervised the makerspace's logistics (inventory, tools labeling, orders)
- Gave introductory robotics courses to new members

Member of EPFL's Coaching club — 09/2015 - 06/2016
- Advised a group of 6 fresh students during their first year on the best practices to succeed, managing stress, socializing and preserving their mental health

REFERENCES

Dr. Thierry Simeon
Thesis Supervisor, LAAS
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Dr. Rachid Alami
Thesis Supervisor, LAAS
rachid.alami@laas.fr