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I believe in approaching a problem from its foundation and achieving excellence through exploring unconventional yet efficient solutions.

Applying for: Postdoctoral Researcher

- PhD in robotics
- Collaboration with industry and academic labs
- Publications with high h-index
- Professional experience in product development
- Completed 3 international research projects
- Representative in International Study Council

Education

- Nov '23 | **PhD in Robotics, CNRS**
Cuspidal robots : Analysis, classification and application of 6R cuspidal serial robots
Advisors: Philippe Wenger, Damien Chablat
- Sep '20 | **MS, Ecole Centrale de Nantes**
Robotics Engineering - Erasmus Mundus
Master thesis: [Optimal design of a robot mechanism for otological surgery](#), Advisor: Damien Chablat
- Sep '19 | **MS, University of Genova**
Robotics Engineering - Erasmus Mundus
Student Representative in Council of study courses

Professional Experience

- Apr '24 | **Ecole Polytechnique Fédérale de Lausanne**
Current | **Postdoctoral Researcher**
- Working on analysis and path planning of generic 7R robots
 - Collaborated with internal members on topics of Robot Learning using Dynamical Systems and Transfer Learning framework
 - Collaborated with external members on topics of Algebraic Topology and Geometric Algebra
- Jan '24 | **Centre National de Recherche Scientifique**
Mar '24 | **Research Engineer**
- Developed algorithms for path planning of generic 6R robots
 - Worked on analysis of generic 6R robots that are cuspidal
- Oct '17 | **Indian Institute of Technology, Jodhpur**
May '18 | **Junior Research Fellow, Robotics Laboratory**
- Developed full-body sensorless active compliant 6dof parallel mechanism
 - Collaborated with DFKI GmbH for an architecture of dynamic analysis
 - Derived a kinematic solution for multi-agent payload manipulation for scalability

Invited talks

- **Summer school** on Singularities in Mechanisms & Robotic manipulators @ Nantes
- **Special Semester** on Kinematic Aspects of Robotics @ Linz, Austria
- **Lecture** on dangers of cuspidal robots in collaborative application @ EPFL

Research projects

- NExT (Nantes Excellence Trajectory for Health and Engineering) Initiative and the Human Factors for Medical Technologies ([FAME](#))
- Efficient and Certified Robot Motion Planning ([ECARP](#)) ANR-19-CE48-0015, FWF I4452-N
- EU project - Dynamic Agile Production Robots that Learn and optimise knowledge and operations ([DARKO](#))

Scholarships

- Erasmus Mundus Consortium Scholarship, EMARO+, 2018-20
- Invest Your talent in Italy, 2019

Technical Skills

- **Maple** - Professional experience
- **Python** - Professional experience
- **CATIA** - Academic projects
- **MATLAB** - Academic projects
- **C, C++** - Academic projects

Soft skills

- Quick learner
- Adaptable
- Result oriented
- Leadership
- Mentorship
- Management

List of selected publications

Journal articles

- Sep '24 | **Kinematic issues in 6R cuspidal robots, guidelines for path planning and deciding cuspidality**
Salunkhe, D.H., Marauli, T., Mueller, A., Chablat, D. and Wenger, P.
International Journal of Robotics Research (**IJRR**),
<https://doi.org/10.1177/02783649241293481>
- Jan '22 | **Necessary & sufficient condition for generic 3R serial robot to be cuspidal**
Salunkhe, D.H., Spartalis, C., Capco, J., Chablat, D., Wenger, P.
International Journal on Mechanism and Machine Theory (**MMT**),
<https://doi.org/10.1016/j.mechmachtheory.2022.104729>
- Jul '22 | **An efficient combined local and global search strategy for optimization of parallel kinematic mechanisms with joint limits and collision constraints**
Salunkhe, D.H., Michel. G, Kumar, S., Chablat, D.
International Journal on Mechanism and Machine Theory (**MMT**),
<https://doi.org/10.1016/j.mechmachtheory.2022.104796>
- Aug'21 | **Literature Review on Endoscopic Robotic Systems in Ear and Sinus Surgery**
Michel. G, **Salunkhe, D.H.**, Bordure. P, Chablat. D
Journal of Medical Devices, American Society of Mechanical Engineers (**ASME**),
<https://doi.org/10.1115/1.4052516>
- Mar '21 | **Geometric atlas of the middle ear and paranasal sinuses for robotic applications**
Michel. G, **Salunkhe, D.H.**, Chablat. D, Bordure. P
International journal on Surgical Innovation, (**SI**),
<https://doi.org/10.1177/15533506211039675>
- May '19 | **Sensorless full body active compliance in a 6 DOF parallel manipulator**
Dutta, A., **Salunkhe, D.H.**, Kumar, S., Udai, A.D. & Shah, S. V
Robotics and Computer-Integrated Manufacturing, (**RCIM**), Volume 59,
<https://doi.org/10.1016/j.rcim.2019.04.010>

Conference proceedings

- Jul '23 | **Time-Optimal Point-To-Point Motion Planning and Assembly Mode Change of Cuspidal Manipulators: Application to 3R and 6R Robots**
Marauli, T., **Salunkhe, D.H.**, Mueller, A., Chablat, D. and Wenger, P.
International Conference on Intelligent Robots and Systems (**IROS**), 2023,
<https://doi.org/10.1109/IROS55552.2023.10341420>

- May '23 | **Trajectory planning problems in commercial cuspidal robots**
Salunkhe, D.H., Chablat. D and Wenger. P
International Conference on Robotics and Automation (**ICRA**), 2023,
<https://doi.org/10.1109/ICRA48891.2023.10161444>
- Jul '22 | **Geometry based analysis of 3R serial robot**
Salunkhe, D.H., Capco. J, Chablat. D and Wenger. P
International Conference on Advances in Robot Kinematics (**ARK**), 2022,
https://doi.org/10.1007/978-3-031-08140-8_8
- May '22 | **Design optimization of a parallel manipulator for otological surgery**
Salunkhe, D.H., Michel, G., Kumar, S., Olivier, E., Sanguineti, M., Chablat, D.
New frontiers of parallel robotics, workshop of International Conference on Robotics and Automation (**ICRA**), 2022,
hal-03757437
- May '22 | **Deciding cuspidality of manipulators through computer algebra and algorithms in real algebraic geometry**
Chablat. D, Prebet. R, Safey El Din. M, **Salunkhe, D.H.** and Wenger. P
(**authors ordering is alphabetical**)
International Symposium on Symbolic and Algebraic Computation (**ISSAC**), 2022,
<https://doi.org/10.1145/3476446.3535477>
- Jun '20 | **A new RCM mechanism for an ear and facial surgical application**
Michel. G, **Salunkhe, D.H.**, Chablat. D, Bordure. P
International Conference on Robotics in Alpe-Adria Danube Region (**RAAD**), 2020,
https://doi.org/10.1007/978-3-030-48989-2_44
- Aug '19 | **Motion planning for multi-mobile-manipulator payload transport systems**
Talamraju. R, **Salunkhe, D.H.**, Rajappa. S, Ahmad. A, Karlapalem. K, Shah. S
International Conference on Automation Science and Engineering (**CASE**), 2019,
<https://doi.org/10.1109/COASE.2019.8842840>
- Jun '17 | **Force/position control of 3 dof delta manipulator with voice coil actuator**
Udai. A. D, **Salunkhe, D.H.**, Dutta. A, Mukherjee. S
Proceedings of International conference on Advances in Robotics (**AIR**), 2017,
<https://doi.org/10.1145/3132446.3134897>
- Dec '16 | **Design, trajectory generation and control of quadrotor research platform**
Salunkhe, D.H., Sharma. S, Topno. S. A, Darapaneni. C, Kankane. A, Shah. S
International Conference on Robotics and Automation for Humanitarian Applications (**RAHA**),
<https://doi.org/10.1109/RAHA.2016.7931876>