Ameya **Pore**

Marie Skłodowska-Curie Research Fellow ·

ALTAIR Robotics laboratory, Department of Computer Science, UNIVR, Italy

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Research Interest

Computing Science

- Deep reinforcement learning for robotic manipulation

Education

University of Verona
Verona, Italy

PhD in Computer Science
Oct 2019 - August 2023

- Awarded the **Marie Skłodowska-Curie fellowship** under the ATLAS project by European Union's Horizon 2020 research and innovation programme.
- Passed with distinction

Universitat Politècnica de Catalunya
Barcelona, Spain

PhD in Biomedical Engineering
Oct 2019 - August 2023

- Secondary institute for co-tuttele doctoral studies.
- Passed with *cum laude* distinction

University of Glasgow
Glasgow, UK

MS in Computing Science
May 2018 - April 2019

- Awarded **Erasmus+** International mobility fellowship (12 months)
- CGPA- 9.3/10

IISER (Indian Institute of Science Education and Research, Pune)
Pune, India

BS in Life Sciences
Aug. 2014 - Apr. 2018

- Awarded **INSPIRE fellowship** by Department of Science and Technology, India
- CGPA- 8.4/10

Experience/ Research Projects

PhD Thesis: ALTAIR Robotics laboratory, Department of Computer Science, UNIVR
Verona, Italy

Advisor- Prof. Paolo Fiorini, Prof. Alicia Casals
Oct. 2019 - Oct. 2022

- Deep Reinforcement Learning (DRL) for surgical robot control
- Constrained reinforcement learning and formal verification of policies to enhance safety.
- Representation learning for multi-tasking to learn autonomous navigation
- Learning surgical gestures from human demonstrations via imitation learning

Master's thesis: Computer Vision and Autonomous systems group
Glasgow, UK

Advisor- Dr. Gerardo Aragon-Camarasa
May. 2018 - May. 2019

- Developed a hierarchical reinforcement learning approach for robotic pick and place task that is efficient than state-of-the-art algorithms

Internship: Mechanobiology Institute (MBI), National University of Singapore
Singapore

Internship Supervisor- Dr. Ronen Zaidel-Bar
Jan. 2017 - Aug. 2017

- Modelling embryonic cell movements via live-cell imaging (spinning disk confocal Microscopy)
- International mobility funded by MBI

Undergraduate Research, Epigenetics Lab
Pune, India

Internship Supervisor- Prof. Sanjeev Galande
Aug. 2016 - Apr. 2018

- Biomechanics of tissue regeneration

Skills

Computing

- Relevant Courses: Reinforcement learning, Deep Unsupervised learning, Robotics Foundations, Computer Vision, surgical robotics,
- Advanced proficiency: **Unity3D, Python, Pytorch, OpenAI gym** environments

Notable Achievements

Festival of Innovation and Entrepreneurship
UNIVERSITY REPRESENTATIVE

New Delhi, India

Mar. 2018

- Invited by the **Office of the President of India** New Delhi, March 2018: Festival of Innovation and Entrepreneurship. One among ten leaders selected across India.

Incubation center
TEAM LEAD

Pune, India

Oct. 2017- Oct.2019

- Secured funding of 1M USD for setting up an incubation center at IISER Pune

Events
LEAD ORGANIZER

Pune, India

August. 2017- July 2018

- Lead organizer of various events such as **Startup Weekend Pune**, Coffee with a startup

Events Attended

WORKSHOP, CONFERENCES AND SUMMER SCHOOLS

06/2023	**Lead organizer**, Hamlyn Symposium on Medical Robotics (HSMR2023) Workshop: Autonomous flexible robots	*London*
06/2023	**Presentation**, Reinforcement Learning Summer School	*Barcelona*
10/2022	**Paper presentation**, International Conference on Intelligent Robots and Systems (IROS2022)	*Kyoto*
06/2022	**Paper presentation**, Hamlyn Symposium on Medical Robotics (HSMR2022)	*London*
04/2022	**Paper presentation**, Conference on Computer and Robot Assisted Surgery (CRAS2022)	*Napoli*
10/2021	**Paper presentation**, International Conference on Intelligent Robots and Systems (IROS2021)	*Virtual*
11/2021	**Paper presentation**, International Symposium on Medical Robotics (ISMR2021)	*Atlanta*
07/2021	**Attendee**, ETH Robotics Summer School and Symposium (RSS2021)	*Zurich*
10/2020	**Paper presentation**, International Conference on Intelligent Robots and Systems (IROS2020)	*Virtual*
06/2020	**Paper presentation**, International Conference on Robotics and Automation (ICRA2020)	*Virtual*
12/2020	**Attendee**, Conference on Neural Information Processing Systems (NeurIPS2020)	*Virtual*
07/2020	**Attendee**, Summer School on tissue segmentation, modelling and deformation	*Virtual*
12/2019	**Runner-up** , Hamlyn Winter School, Imperial College London	*London*
09/2019	**Attendee** , Summer School on Surgical robots, Montpellier	*Montpellier*

Publications

JOURNAL AND CONFERENCE

- **Ameya Pore**, Zhen Li, Diego Dall'Alba, Albert Hernansanz, Elena De Momi, Arianna Menciassi, Alicia Casals, Jenny Dankelman, Paolo Fiorini, Emmanuel Vander Poorten, "Motion Planning for Robot-assisted Intraluminal and Endovascular Autonomous Navigation: a Systematic Review", 2023 IEEE Transactions on Robotics (T-RO)
- Davide Corsi*, Luca Marzari*, **Ameya Pore***, Alessandro Farinelli, Alicia Casals, Paolo Fiorini, Diego Dall'Alba, "Constrained Reinforcement Learning and Formal Verification for Safe Colonoscopy Navigation", 2023 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS2023), (* - equal contribution)
- **Ameya Pore**, Martina Finocchiaro, Diego Dall'Alba, Albert Hernansanz, Gastone Ciuti, Alberto Arezzo, Arianna Menciassi, Alicia Casals, Paolo Fiorini, "Colonoscopy Navigation using End-to-End Deep Visuomotor Control: A User Study", 2022 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS2022)
- **Ameya Pore**, Eleonora Tagliabue, Marco Piccinelli, Diego Dall'Alba, Alicia Casals, Paolo Fiorini, "Learning from Demonstrations for Autonomous Soft-tissue Retraction", 2021 IEEE International Symposium of Medical Robotics (ISMR2021)
- **Ameya Pore**, Davide Corsi, Enrico Marchesini, Diego Dall'Alba, Alicia Casals, Alessandro Farinelli, Paolo Fiorini, "Safe Reinforcement Learning using Formal Verification for Tissue Retraction in Autonomous Robotic-Assisted Surgery", 2021 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS2021)
- Luca Marzari, **Ameya Pore**, Diego Dall'Alba, Gerardo Aragon-Camarasa, Alessandro Farinelli, Paolo Fiorini, "Towards Hierarchical Task Decomposition using Deep Reinforcement Learning for Pick and Place Subtasks", 2021 IEEE International Conference on Advanced Robotics (ICAR2021)
- Eleonora Tagliabue*, **Ameya Pore***, Diego Dall'Alba, Enrico Magnabosco, Marco Piccinelli, Paolo Fiorini , "Soft Tissue Simulation Environment to Learn Manipulation Tasks in Autonomous Robotic Surgery", 2020 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS2020), (* - equal contribution)
- **Ameya Pore** and Gerardo Aragon-Camarasa,"On simple reactive neural networks for behaviour-based reinforcement learning", 2020 IEEE International Conference on Robotics and Automation (ICRA2020)

Abstracts

- **Ameya Pore**, Nicola Piccinelli, Giacomo De Rossi, Matteo Piano, Daniele Meli, Diego Dall'Alba, Riccardo Muradore, Paolo Fiorini, "EndoVine: Soft Robotic Endoscope for Colonoscopy", 2022 Hamlyn Symposium on Medical Robotics (HSMR2022)
- Fernando Gonzalez Herrera, **Ameya Pore**, Luca Sestini, Sujit Kumar Sahu, Guiqiu Liao, Philippe Zanne, Diego Dall'Alba, Albert Hernansanz, Benoit Rosa, Florent Nageotte, Michalina Gora, "Autonomous image guided control of endoscopic orientation for OCT scanning", 2022 Conference on Computer and Robot Assisted Surgery (CRAS2020)
- **Ameya Pore**, Eleonora Tagliabue, Diego Dall'Alba, Paolo Fiorini, "Framework for soft tissue manipulation and control using Deep Reinforcement Learning", 2020 Conference on Computer and Robot Assisted Surgery (CRAS2020)

Extracurricular Activity

Entrepreneurship
Pune, India

Co-founder and former head of the Entrepreneurship Cell, IISER Pune · *May. 2016 - May 2018*
- Mentored various small scale projects such as detecting Rail track defects autonomously, tracking vaccination, algorithm to detect Dry eye syndrome etc.
- Conducted workshops on Design thinking, rural innovation and prototyping boot-camp.

Other
- *Dance* Intermediate level dancer in Cuban Salsa and Bachata
- *Social-* Former coordinator of DISHA, a non-profit organization for teaching under-privileged children
- *Sports-* Basketball, Cricket, Chess (ELO:1500)
- *Music-* Learnt Tabla (Indian classical instrument) for 7 years