



Angelo Catalano earned his B.Sc in Mechanical Engineering from the Polytechnic of Bari, Italy, in 2022. He then completed his M.Sc. in Mechatronics and Robotics Engineering with honors in 2024 through a double degree program between New York University, USA, and the Polytechnic of Bari. He was a Fellow Researcher at the Soft Robotics for Human Cooperation and Rehabilitation lab at the Italian Institute of Technology (IIT) in Genoa, where he conducted a study on pneumatic soft robotic prosthetic hands. Currently, he is a Ph.D. candidate at the Polytechnic of Bari, holding a scholarship titled “Robot-as-a-service for the Digital Industry” under the supervision of Prof. Cacucciolo and Prof. Dotoli.

1. Can you tell us about your academic journey and how you arrived at your current research topic?

My academic journey started in a very different direction from where I am today, and I believe it reflects how passions and interests can evolve through study and the inspiration of Professors and professionals. I first enrolled in Mechanical Engineering at Politecnico di Bari with the dream of becoming a Formula 1 race engineer. Over time, however, I became increasingly fascinated by mechatronics and robotics, and I developed the ambition to pursue further studies and gain international experience.

This led me to the Master's program in *Mechanical Engineering – Mechatronics and Robotics* at Poliba, with the goal of completing a Double Degree at New York University. At NYU, I had the privilege to work in the laboratory of Prof. Maurizio Porfiri, where I discovered my passion for research. There, I worked on medical robotics for post-stroke rehabilitation and published my first scientific papers.

Wishing to continue growing while also bringing innovation back to Italy, I joined the Italian Institute of Technology, where I worked with Prof. Antonio Bicchi and further developed my skills in robotics research.

Since November 2024, I have been a Ph.D. student at Politecnico di Bari, working in two laboratories that play a fundamental role in shaping my identity as a researcher. I am part of the Decision and Control Lab, led by Prof. Mariagrazia Dotoli, where I focus on control and automation, and the RoboPhysics Lab, led by Prof. Vito Cacucciolo, where I explore the field of soft robotics and contact modeling.

My current research combines control and physical modeling, aiming to design innovative solutions for future robotic systems. But beyond the research itself, what makes this experience meaningful is the environment: the guidance of my Professors, the collaborative atmosphere of the labs, and the opportunities I have to grow both scientifically and personally.

I also actively contribute to academic life at Politecnico di Bari — for example, by serving as a tutor for thesis students, and by volunteering at international conferences like CASE 2024. These experiences have helped me build not only technical skills but also a strong sense of community and scientific responsibility.

2. What inspired you to pursue research in your chosen field? How do you see it impacting society and humanity?

What has always fascinated and motivated me in research is the extraordinary adaptability of the technologies I work on — in particular, soft electroadhesive grippers, which combine the principles of soft robotics, contact mechanics, and smart materials. These systems can be applied to very different domains, from delicate manipulation in medical robotics to advanced applications in aerospace and other demanding environments.

Their versatility lies in their ability to interact gently but effectively with different types of objects and surfaces, opening the door to applications that go well beyond traditional robotic grasping.

Another key factor that inspired me is the perspective of automation: the possibility of developing intelligent and flexible systems that support human activities, reduce workload, increase safety, and create new opportunities for collaboration between people and machines.

I believe that this interdisciplinary nature is the greatest value of my field. The research I am carrying out today at Politecnico di Bari, within the Decision and Control Lab and the RoboPhysics Lab, has the potential to generate not only industrial and technological impact, but also a broader social impact — paving the way toward a future where intelligent and adaptive robotic systems become an integral part of everyday life, for the benefit of society as a whole.

3. What motivated you to join the IEEE and the SMC Society?

My decision to join IEEE and the SMC Society was driven by the desire to be part of an international scientific community that connects students and researchers from all over the world.

Today, this motivation is strongly reinforced by my Ph.D. journey at Politecnico di Bari, under the guidance of Prof. Mariagrazia Dotoli and Prof. Vito Cacucciolo, who are both deeply engaged in international collaborations and committed to fostering innovation. Through their example, I've learned how powerful and transformative it is to contribute to a global network of ideas.

Being part of IEEE and SMC gives me the chance to grow, to represent my university and labs internationally, and to keep learning from people who are pushing the boundaries of science and technology.

4. How has being a member impacted your academic or professional journey?

Being a member of IEEE and the SMC Society has had a significant impact on my journey, as it allowed me to connect with a scientific community far larger than what I could have reached through my academic experiences alone.

The opportunity to attend conferences, to read and publish in prestigious venues, and to interact with colleagues from very different backgrounds has helped me grow not only as a researcher but also as a scientific communicator. It pushed me to present my ideas more clearly and effectively, and to embrace international collaborations that enrich my daily work.

In addition, membership serves as a constant source of motivation: knowing that I am part of a global community working toward innovation and the advancement of humanity inspires me to give my best in my research path.

5. Where do you see yourself in the next 5-10 years?

That's a good question... and honestly, I don't think there is a single, definitive answer. But one thing I'm sure of is that I want research to remain a constant part of my life, whether in industry or in academia. I fell in love with this world, and I can't imagine a future away from it.

I truly believe that research is one of the main engines of development and progress. Without research, there would be no innovation and no future—not only for industry but also for everyday life. Many of the technologies we take for granted today were born from years of research in specialized fields and eventually found their way into our homes, often without us even realizing it.

In the future, I see myself even more deeply connected to this field, with a stronger and broader background in control and robotics. I also hope to pass on the passion and knowledge I've gained, inspiring and supporting new generations of researchers. I want to contribute not only through my work, but also by helping others fall in love with science and technology, just as I did.

6. *What advice would you give to other students considering joining IEEE or a specific society like SMC?*

My advice to any student considering joining IEEE or a scientific society like SMC is: don't be afraid to take the first step. Becoming part of an international community opens up horizons you might not even imagine. It means listening, learning, and engaging with people who are actively building the future of research and technology.

It's not just about adding a line to your CV — it's about growing as a person, stepping outside your comfort zone, and discovering new perspectives. In my case, being part of IEEE has allowed me to connect with realities I would never have encountered if I had stayed only within my local environment.

So my advice is to stay curious, get involved, and embrace every opportunity to learn and contribute. That's how you truly grow — not only as a researcher but also as a person.