



The **Ph.D. Course in Mathematical Models for Engineering, Electromagnetics and Nanosciences (MMIENS)**, based at the Department of

Basic and Applied Sciences for Engineering (SBAI), is aimed at preparing young graduated students to perform theoretical and applied research in the fields of mathematics, electromagnetics and material sciences. The most important aim of the curriculum in Mathematics for Engineering is *to provide an intense scientific and technological preparation and, at the same time, to provide young mathematicians an opening towards the problems coming from the productive world*. The Doctorate encourages theses concerning problems posed by an external entity, since an applied mathematician should be able to communicate with the productive and managerial world.



Expert.ai is a leading company in artificial intelligence applied to text with more than 20 years of experience in natural

language understanding. Today it is a global, publicly traded company committed to innovation and to providing customers and partners with concrete results and tangible business value. It works with some of the largest organizations and government agencies throughout Europe, the Americas and the Middle East. Analysts, data scientists and computational linguists worldwide recognize the value of their patented artificial intelligence technology and its unique hybrid approach to NL, which combines symbolic human-like comprehension and machine learning as the highest performing, most pragmatic way to address even the most complex unstructured information management use cases.



**Eleonora Ammaturo** studied at Sapienza University in Rome where she achieved a Master Degree in Management Engineering. Her Thesis “*Multiple Instance Learning Algorithms for medical diagnosis*”, was about the Multiple Instance Learning model applied to the discernment from Melanoma and common nevus through image analysis. Her academic course focused on Operations Research comprising exams on Continuous Optimization, Combinatorial Optimization, Nonlinear Optimization and Machine Learning. During her studies she went deeply into all these topics with the application of the programming languages Python, SQL and Ampl.



**SAPIENT: Semantic and Automatic Processing of Information about Environment**

The research project is focused on the development of new systems concerning Optical Character Recognition through a semantic analysis of complex documents. The project examines the definition of Artificial Intelligence methodologies following a hybrid approach of image analysis and Natural Language Understanding (NLU). This involves texts and papers with complex layout supported by tables and graphs etc. that OCR systems currently can't elaborate. The expected result is the development of the prototype SAPIENT which will enable an easy and rapid analysis of large quantities of documents pertaining to the environment.