LUCAS MORILLO-MENDEZ obtained his BSc degree in psychology from the Complutense University of Madrid, Spain, in 2013, and completed his MSc in Cognitive and Clinical Neuroscience from Goldsmiths College (University of London) in 2014. After working as a clinical neuropsychologist and in the field of UX research for the automotive industry, he has been a Ph.D. student since 2018 at the Center of Applied Autonomous Sensor Systems, in Örebro, Sweden. His research interests are in cognitive-based Human-Robot interactions.

This dissertation presents advances in social human-robot interaction (HRI) and human social cognition through a series of experiments in which humans face a robot. A predominant approach to studying the human factor in HRI consists of placing the human in the role of a user to explore potential factors affecting the acceptance or usability of a robot. This work takes a broader perspective and investigates if social robots are perceived as social agents, irrespective of their final role or usefulness in a particular interaction. To do so, it adopts methodologies and theories from cognitive and experimental psychology, such as the use of behavioral paradigms involving gaze following and a framework of more than twenty years of research employing gaze to explore social cognition. The communicative role of gaze in robots is used to explore their essential effectiveness and as a tool to learn how humans perceive them. Studying how certain social robots are perceived through the lens of research in social cognition is the central contribution of this dissertation.

This thesis presents empirical research and the multidisciplinary literature on (robotic) gaze following, aging, and their relation with social cognition. Papers I and II investigate the decline in gaze following associated with aging, linked with a broader decline in social cognition, in scenarios with robots as gazing agents. In addition to the participants’ self-reported perception of the robots, their reaction times were also measured to reflect their internal cognitive processes. Overall, this decline seems to persist when the gazing agent is a robot, highlighting our depiction of robots as social agents. Paper IV explores the theories behind this decline using a robot, emphasizing how these theories extend to non-human agents. This work also investigates motion as a competing cue to gaze in social robots (Paper III), and mentalizing in robotic gaze following (Paper V).

Through experiments with participants and within the scope of HRI and social cognition studies, this thesis presents a joint framework highlighting that robots are depicted as social agents. This finding emphasizes the importance of fundamental insights from social cognition when designing robot behaviors. Additionally, it promotes and supports the use of robots as valuable tools to explore the robustness of current theories in cognitive psychology to expand the field in parallel.