Sasha Rubin
University of Naples "Federico II"
✉ *rubin@unina.it*

Divisional Manager
Ms. Aniza A. Wahid

June 20, 2017

Dear Ms. Wahid,

I am applying for the position of Assistant Professor in Computer Science.

I am a computer scientist interested in formal aspects of artificial intelligence, and since 2015 I have been a Post-doc at the University of Naples "Federico II", mentored by Aniello Murano, with a focus on logics for temporal, epistemic and strategic reasoning in artificial intelligence. As this letter will show, formal methods in artificial intelligence informs my research, supervision and teaching since 2014.

Background My PhD thesis, titled "Automatic Structures" (2004) won the best-doctoral thesis in the faculty of computer science at the University of Auckland. It was about using automata and logic to describe and reason about infinite mathematical structures. From 2004-2007 I held a prestigious individual postdoctoral fellowship funded by the New Zealand government on the same topic. I then held various postdoctoral and teaching positions until 2014. Feeling the need to work in an area with more relevance to computer scientists, since 2014 I started shifting my research to formal methods in AI. From 2015-2016 I held another individual fellowship, a COFUND Marie Curie fellowship, jointly funded by the European Commission and the Institute for Higher Mathematics (INdAM "F. Severi"). The topic of this fellowship was verification of lightweight multi-agent systems; one of the publications from this work resulted in a best-paper award at PRIMA15.

Integration in the international community Since 2013, I am chair or organiser of 5 events (workshops and conferences), including the First Workshop on Formal Methods in Artificial Intelligence in 2017 with keynote speakers including Hector Geffner and Giuseppe De Giacomo. I have served as a PC member for AI conferences such as IJCAI17, AAAI17, and ECAI16. Since 2014 I have collaborated with leading experts in Knowledge Representation (Giuseppe De Giacomo), Automated Planning (Hector Geffner and Blai Bonet), Logic in Computer Science (Moshe Vardi and Helmut Veith), and Formal Methods in Multi-agent systems (Michael Wooldridge and Alessio Lomuscio).

Teaching and Supervision While teaching at Cornell University 2008-2009 I sought a number of teaching mentors, including Maria Terrell (Department of Mathematics) and David Way (Centre for Teaching Excellence) to discuss successful teaching strategies, both philosophical and concrete. As a result, according to my student evaluations, I was clear, organised, proactively willing to help, and motivating.

I have a strong record of undergraduate supervision: I have supervised 7 undergraduates (all resulting in publications), and I am currently supervising an undergraduate thesis on "Graphical Games".

Although I did not attend a liberal-arts college, while at university I attended many lectures and seminars on various non-scientific topics of interest to me, including poetry, comparative literature, history of music, and history of mathematics (I even had a few summer jobs assisting with the

publication of the South African Review of Books, a now defunct periodical). In short, in this age of specialisation, I try to keep my mind open to other ways of thinking. Being a model of clear and transparent thinking is probably the most important task of a teacher.

Research The quality of my research can be quickly but roughly gauged from the venues in which I publish (that said, I strongly maintain that the only way to gauge the strength of a paper is for an expert to read it). These include 16 papers in conferences ranked A* by the CORE ranking (`portal.core.edu.au/conf-ranks/`), 10 of which were published since 2016, as well as one book published in 2015.

My vision is to bring-formal methods and artificial intelligence closer together. This is motivated by the need to ensure that the systems being built using, e.g., machine learning, can explain their decisions and actions to human users, so-called "explainable AI" (for instance, in healthcare, a diagnostic and prescription system without such features will likely go unused and untrusted). To this end, my work has some connections with and could benefit from that of Aquinas Hobor (verification, automated theorem proving) and Robby Tan (machine learning, neural networks). I bring personal expertise on logics and formal-methods for temporal, strategic and epistemic reasoning; this is complemented by my deep integration with world-leaders in AI. Concretely, I plan to organise future editions of the "Formal Methods in Artificial Intelligence" workshop.

More details can be found in the accompanying documents.

I look forward to hearing from you,

Sasha Rubin