Student Assistant Sought for Research Job

August 10, 2020

"Bayesian Networks are as important to AI and Machine Learning as digital circuits are to Computer Science" as stated by Stuart Russell, University of California, Berkeley.

Description. Bayesian Networks [1] (BNs for short) are probabilistic graphical models that combine graph theory and probability theory to represent a probability distribution over a set of random variables in a compact manner. They are used in various application areas such as medical diagnosis, biology, and spam filters. BNs are structurally directed acyclic graphs in which the nodes represent variables and the edges represent the conditional dependencies between these variables. The dependencies are quantified by conditional probability tables.
There are many interesting problems on Bayesian Networks to explore; ranging from probabilistic inference to sensitivity analysis by parameter synthesis. We aim to investigate these problems by exploiting probabilistic model checking [3] and probabilistic programs [4].

Requirement. We are looking for a motivated, enthusiastic student assistant with basic familiarity of model checking and with programming skills in C++ and Python, who can help us develop some BN-related features mainly in the probabilistic model checker, Storm [2]. Availability for a long period is important to us, let's say for at least 6 months.

If you are interested in the position or have any further questions, do not hesitate to contact Bahare Salmani (salmani@cs.rwth-aachen.de). Please provide your CV and transcript of records for the application.

References

[1] Darwiche, A.: Modeling and Reasoning with Bayesian Networks. Cambridge University Press (2009)

[2] Dehnert, C., Junges, S., Katoen, J., Volk, M.: A Storm is coming: A modern probabilistic model checker. In: CAV (2). Lecture Notes in Computer Science, vol. 10427, pp. 592–600. Springer (2017)

[3] Katoen, J.: The probabilistic model checking landscape. In: LICS. pp. 31–45. ACM (2016)

[4] Kozen, D.: Semantics of probabilistic programs. In: FOCS. pp. 101–114. IEEE Computer Society (1979)