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Dear Octopi project faculty members,

I am writing to express my interest in the PhD student position at Chalmers University of Technology you are offering. I am a Licentiate Student in Computer Science (five years program, equivalent to a MSc. degree) at the National University of Rosario, in Rosario, Argentina. I am currently waiting for the approval of my final dissertation, expecting to graduate in June of the current year. I am confident that my computer science background along with my research experience makes me an ideal candidate for your open position.

I have a strong background in functional programming, specially in Haskell, since it is the main programming language used at many courses of my ongoing licentiate degree. Over the past two years, I spent my time working on penetration testing in Haskell. Starting with an internship at CIFASIS-CONICET supervised by Gustavo Grieco, where I became one of the main developers of QuickFuzz, a prolific experimental fuzzer written in Haskell and based on QuickCheck. There, I worked mainly developing meta-programming tools to generate random data based on external libraries interfaces. This internship gave me the opportunity of co-authoring an article published in the Journal of Systems and Software, addressing the state-of-the-art techniques used in the development of QuickFuzz to exploit datatype-driven generation of data. Moreover, in mid-2107 I started working with Professor Alejandro Russo on a meta-programming tool to derive optimized QuickCheck generators using a predictive approach. In this light, I had the opportunity to visit Chalmers University in October of 2017, with the purpose of writing an article (currently under revision) submitted to the International Conference on Functional Programming, describing the theoretical an empirical results involved in the development of DRaGen, the resulting tool of the joint work with Alejandro.

I think that software testing is a critical task that can be greatly automated in the presence of systems developed using a strongly typed language like Haskell, exploiting the statically known compile-time information. A research target highly relevant to the Octopi project, considering the current exponential growth of, barely verified, unsafe IoT devices.

I believe that I am a suitable candidate for the PhD position in view of my expertise on functional programming and random testing. I hope therefore, that on consideration of my CV and the additional information I am providing, you will be persuaded of my potential to perform well and make a real contribution to the Octopi project. In particular, my expertise ideally fits the Track E. (*Penetration Testing*) of the project, which I would like to contribute to.

Thank you very much for taking the time to review my application. I am really looking forward to hearing from you. Feel free to contact me at anytime for further information.

Kind regards.

Agustín Mista.