Statement of purpose

Claudio Agustín Mista

Four years of Computer Science study and a succesfull student internship at Argentina's scientific research institute led me to where I am today: wanting to become an active member of the scientific community, interested in research fields such as Theory of Programming Languages and Systems Security.

My personal interest in the academia begun right after I was exposed to the concept of Functional Programming for the first time at a data structures course in my university (more precisely with the Haskell programming language), wondering myself about the many advantages that comes with a programming language with such strong mathematical underliying machinery. Many concepts of the categoy theory that I had to study before now have a *useful* application in real world sofware!

My first approach to the scientific research ecosystem was at my student internship CIFAFIS-CONICET under the supervision of Gustavo Grieco and Martín Ceresa, where I actively participated improving QuickFuzz, a Haskell written experimental grammar fuzzer able to find security compromising bugs in real world applications and libraries. In particular, I have studied and implemented a technique to automatically derive random value generators of third-party libraries using metaprogramming. During this internship, we also wrote an article submitted to the the Journal of Systems and Software, describing the state of the art techniques used and the results obtained in the later stages of development of QuickFuzz. This article is currently under revision.

After finishing my student internship, I kept working at CIFASIS-CONICET where I am doing relevant research to my Master's thesis, related to the structural minimization of bug inducing test cases.

Once I finish my Master in Computer Science studies, I am interested in applying for a PhD. position where I could make active research on the fields of my interest. In particular, I aim to make a progress in how functional programming and software security can converge leading in better and safer systems.

Since my geographical situation does not offer many academic events of this degree of relevance, I believe that having an opportunity to assist to the Cornell, Maryland, Max Planck Pre-doctoral Research School would be an important step in the direction I want my academic career to evolve.