

Yesterday I was told that my collaborator, mentor, and one of my dearest friends, Mario Diaz, passed away on Saturday night (August 31st, 2024). It is hard to believe that he is gone—forever. Mario once told me that he believed the opposite of love wasn't hate, but forgetting. In memory of him, I am writing down my stories with Mario—some of the happiest moments of my PhD and the invaluable lessons I learned from him.

I first met Mario in 2017 when I was introduced to him by my PhD advisor, Flavio, and our collaborator, Lalitha. At the time, I was a junior PhD student, and we were all interested in studying information-theoretic privacy. After our first meeting, Mario sent me a long email with comments on a paper I wrote before. I have to admit, I had a mix of feelings at first—he had found an alternative proof for a theorem, one that was shorter and cleaner than the proof I had been quite proud of. But that was Mario: never satisfied with just a solution, always striving to understand the deeper essence behind any mathematical problem. This profoundly influenced how I would tackle research problems in the future.

In the summer of 2018, Mario visited us at Harvard and spent the summer sitting next to me. We were wrapping up a paper together, a draft of which we had completed before the summer, but we used those months to refine the writing and incorporate new results to make the story more complete. Mario called our collaboration “adversarial refinement”—each day, I'd write something, and he'd critically review it, and vice versa. Sometimes our discussions became so intense that we had to play a foosball game or eat a 3-scoop ice cream to calm down.

That summer, I learned so much from Mario—not just skills and techniques like classical information-theoretic tools, academic writing (especially for IT papers), and presentations, but also invaluable lessons in research attitude. For example, Mario helped me build ownership of my work and was always generous with authorship. When I started mentoring young researchers, I often asked myself, “what would Mario do in this situation?” Mario also had exceptionally high standards for his work, pushing each paper to its limits. I recall him spending several days going through each assumption in our paper. One day, he was very excited and showed me a corner case that proved an assumption we made was necessary. I feel incredibly fortunate to have learned these lessons from Mario during my early PhD years.

PhD life is challenging. There were many moments when I doubted myself and questioned whether I was doing “something right”. Mario was always there to encourage me. He shared stories of Claude Shannon and Cédric Villani (Mario was reading Villani's *Birth of a Theorem* at the time) and told me that even the brightest minds faced struggles in their pursuit of great discoveries. Having a friend like Mario—someone who was optimistic, encouraging, knowledgeable, and always willing to share his wisdom—was a true gift.

I have so much more to write, but I'll stop here. I hope that one day, when I see you again in the next world, you can teach me more of what you've learned, and I'll have new stories to share with you.



Picture taken in 2018 when we attended ISIT in Vail, Colorado.