

The Mathematical Approach

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Interviewee: Sarah Preum

Think about reading a mystery novel. Is it any fun to just read through? No. The whole point of a mystery novel is to want to solve the mystery on your own. Solving mysteries in your mind is the art of mathematics. This way of thinking about literature is what inspired Dr. Sarah Preum to become a professor in a field where she uses language and math.

Dr. Sarah Preum is a professor of computer science and a researcher. She focuses on machine learning and natural language processing. Natural language processing is a branch of artificial intelligence that works on teaching computers to understand human language. Dr. Preum works with this branch of computer science because it connects to her hobby in studying language and it uses analytics in just the way she likes.

From college in Bangladesh to university in the US, Dr. Sarah Preum consider herself very privileged in terms of being in a very supportive environment where her family, friends and mentors have always inspired her to pursue her passion in learning new concepts and creating new ideas. This, she hypothesizes, is because starting from childhood, there is a safety bubble that gets bigger and bigger up until college with a limited number of people you talk to every day. That is until it pops. The people in this bubble are usually advisors or friends, not strangers. But after college, there is no constant set of known people.

In the safety of a college bubble and every day being full with classes, there is also not much time to talk to people you don't know. The time to talk to friends is after classes are finished, and the time to talk to advisors is during the day. This leaves some time for sports or clubs, but almost no college student would intentionally make time to talk to strangers. This is another effect of the college bubble. For Dr. Preum and many others, after years of being in the safety of a bubble, the transition into the outside world has sometimes proved difficult.

Dr. Preum grew up in Bangladesh and she feels very lucky to have parents that unfailingly supported her. Her mother was "always a graceful presence" and inspired Sarah that anything is possible with enough hard work. Another person that Sarah looks up to is Rabindranath Tagore (রবীন্দ্রনাথ ঠাকুর in Bengali). Rabindranath Tagore was a Bengali novelist, songwriter, poet, and philosopher. He is sometimes referred to as "Kabiguru" which means "chief of poets". In 1913, he won the Nobel Prize in literature.

Having always been keen to learn new things, Dr. Preum was very passionate about literature before she decided to pursue math and computer science. She is an avid reader of all genres, but her favorite is mystery and thrillers. She would read countless Sherlock Holmes novels and would always think about techniques to solve the mysteries before reading the conclusion. She would also study etymology and the history of words. All of this mathematical and unique take

on studying words and broadening her vocabulary made Sarah want to pursue a career in computer science. Almost every activity she does now has some connection to mathematics or problem solving. In an ideal world, she would have time to solve murder mysteries, cook, read, hike, and spend time with her family, especially her toddler.

Even though Dr. Preum has not often felt discriminated against in college, she has certainly seen it happen to others and understood the gender gap. Starting in school, she wasn't always sure what career she wanted to pursue. She wanted to be a writer, or a professor, or a doctor! In these times of decisions, Sarah's mom was always there as someone to talk to. For Sarah, math sometimes just felt like a part of the curriculum, that seeps into anything and everything. In trying to find her "academic place" Sarah has realized that you can't label anyone. For example, she has always pushed the statistical bounds, with only 36.77% of the population of Bangladesh having graduated high school and 18.13% having any college education at all.

In Bangladesh, at the time she was growing up, there were not many opportunities for people that wanted to pursue academics. Nowadays, she says, there are more ways to access resources for anyone trying to follow their dreams. The once male-dominated world of STEM has now welcomed women in the field and is seeing that it is not one's gender or race that matters, but rather the desire to do well. Colleges have become more accepting of women and people of color, but there is still a long way to go.

After years of pondering what her true calling was, Sarah realized that, in a way, she doesn't need to have just one true calling. She thinks her current profession embodies her love for teaching, writing, critical thinking, math, and language. On weekends, she loves to go on hikes with her family and cook for them too. She is a firm believer in finding joy in little things, ranging from a nice book to a walk in the park to cooking and sharing a hearty meal with her family and loved ones.

About the Author:

My name is Agastya Chakrabarti, and I am a sixth grader at the Richmond Middle School in Hanover, NH. In math, I enjoy learning why the formulas work. Next year, I hope to take Algebra. I am on the Quiz Bowl and MATHCOUNTS teams. Outside of school, I love to play violin and have toured in New York City.