

PIMS Workshop on Mathematics and Clean Energy Applications

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Narratives in Mathematics and Clean Energy

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My name is Elena Popovici and I am a Computer Scientist. I got into clean energy through a lot of determination. I got interested in clean energy after moving to Vancouver.

I am originally from Romania, where I did a bachelor and a masters in Computer Science. I then went to the east coast of the United States for a PhD in Computer Science, with a focus on optimization and machine learning. After finishing, I started working for a scientific business consulting company in Boston, applying computational techniques to a wide range of domains from insurance to healthcare to naval engineering.

During the 2000-2010 decade that I spent on the east coast, environmental and climate change issues were almost never part of the public conversation. It was after moving to Vancouver that I started learning about them. While I still enjoyed working on mathematically and computationally challenging problems in my job, by itself this wasn't enough for me anymore. I wanted to use my training and skills to help make a difference for what I believe to be the biggest social problem of our time.

Finding a job where I could do both technically-interesting work and climate-relevant work proved to be challenging in itself. I did a lot of networking. I went to various professional meetups and sustainability-themed conferences like Globe, made connections on LinkedIn and had coffee with people. I found that the people making a difference in clean energy were mostly engineers and that the computational needs were a lot more on the software development side than on the algorithmic, mathematical side of computer science.

But I persevered, and since 2018 I work for a Vancouver-based company called Neurio, that makes hardware and software for home electricity management. I use machine learning to forecast electricity consumption and generation from solar panels, and optimization to intelligently operate a battery based on these forecasts. All these algorithms together help make the most of solar power and reduce the grid demand during peak periods.

I also volunteer with the BC Sustainable Energy Association and it was through their events that I met Professor Brian Marcus and was excited to learn about his efforts to get the mathematicians' community to help. I myself am trying to do the same in my own field by co-organizing a Data Science for Social Good meetup that includes a lot of sustainability-focused talks.

I am concerned that some of the hurdles in clean energy adoption are business-driven and political in nature, but at the same time hopeful that the mathematical sciences community can still help on the technical side.