

KNOW THE PERSON BEHIND THE PAPERS

Anne Driemel

Bio: Anne Driemel received her doctorate in 2013 from Utrecht University, after studies of computer science at the Free University of Berlin and the University of Pennsylvania. Following stations at the TU Dortmund and the TU Eindhoven, she moved to the University of Bonn in 2018, where she is now a professor at the Institute of Computer Science and a member of the Hausdorff Center for Mathematics. Since 2022 she is an elected member of the Computational Geometry Steering Committee (term 2022-2026).



We ask all interviewees to share a photo with us. Can you please tell us a little bit more about the photo you shared?

Anne: This photo was taken in our home in Eindhoven. My husband is also a computer scientist and when we first moved in together, we wanted to have a proper chalk board in the home office. It turned out later that we did not use it much for work, but our children liked to draw on it. The second picture shows what is going on behind the scenes.



Can you please tell us something about you that probably most of the readers of your papers don't know?

Anne: Before I discovered theoretical computer science as a subject, I often wanted to become a writer. However, there was no clear career path. Besides, I didn't know what to write about. I thought I first had to get some life experience before I could write a book. I guess you could say that I am an author now, although it is not quite how I envisioned it.

Is there a paper which influenced you particularly, and which you recommend other community members to read?

Anne: I was intrigued by "The nature of statistical learning theory" by Vladimir Vapnik, where he explains central ideas and the historical context of the VC-theory, which is important for PAC-learning. More generally, I recommend reading older concept papers in artificial intelligence. I think those are highly relevant to the field of computer science as a whole today, because many of these ideas have shaped the field from the beginning.

Is there a paper of your own you like to recommend the readers to study? What is the story behind this paper?

Anne: This would be my paper with Peyman Afshani on the complexity of range searching among curves. The story behind it is that Peyman was looking for a range searching problem that is strictly harder than simplex range searching. I was interested in the problem of range searching under the Fréchet distance and whether multi-level partition trees could be used for that. Peyman had developed a technique for proving lower bounds that he wanted to apply. There is also a deeper question involved, namely whether the additional logarithmic factors, that

are caused by extra levels in a multi-level partition tree, are somehow artifacts of the construction, or if we can find a range searching application that observes these extra factors in a lower bound. It turns out that the Fréchet distance has this property.

When (or where) is your most productive working time (or place)?

Anne: This used to be in the evenings. Now that I have a family, the productive times come and go and I don't see a clear pattern. I am probably most productive when I can forget everything around me. This has less to do with a certain time or place, but with the circumstances that allow me to let go of things (e.g. reliable good quality child care).

What do you do when you get stuck with a research problem? How do you deal with failures?

Anne: I learned that it is good to cycle through a small stack of problems. Whenever you get stuck on one problem, you move to the next in the stack. Ideally, by the time you reach the problem again, where you got stuck, you have cleared your mind of the stuckness. Also, it really helps to collaborate with others on research problems, not only to share expertises, but simply because talking about the problem can help tremendously to sharpen the focus and to distill the questions that are important.

Is there a nice anecdote from your career you like to share with our readers?

Anne: I can't think of anything interesting right now.

Do you have any advice for young researchers? In what should they invest time, what should they avoid?

Anne: Find a topic area or application that you care about and try to formulate a new concept or fundamental problem within that area that has not been studied before. Avoid chasing after low-hanging fruits in competition with others. Collaborate, share your problems with others.

What are the most important features you look for when searching for graduate students?

Anne: Ideally, I would like to know if the candidate knows how to write and in particular if they are able to develop their own ideas and thoughts in writing. Another question is how well the candidate is motivated for an academic career. Both things are often difficult to assess, but sometimes the application letter and the interview give away enough hints.

Do you see a main challenge or opportunity for theoretical computer scientists for the near future?

Anne: Climate change.

What kind of opportunities should EATCS offer to researchers, and especially to young researchers?

Anne: I think we could do more to support young researchers with young children. Often, these different challenges come together at a time when an academic career is the most volatile, namely during the postdoc phase. Travel support for conference trips with young children would be great, e.g., to support travel costs of a care-taker person that travels with you.

What can be the role of EATCS in solving the challenges of our society?

Anne: I think we should not underestimate the role of theoretical computer science in society. Sometimes, good theoretical work needs some time to flourish and establish itself, but eventually it may have an impact in unforeseen ways.

Please complete the following sentences:

- *My favorite movie is the Three Colours Trilogy by Krzysztof Kieślowski.*
- *Being a researcher is being free to decide which great problems to spend your time and energy on.*
- *My first research discovery is the notion of c -packedness that characterizes a realistic class of curves for which the Fréchet distance can be approximated in near-linear time (together with Sariel Har-Peled and Carola Wenk).*
- *Theoretical computer science in 100 years from now will be based on the same mathematical foundations.*
- *EATCS in 50 years from now will look very different (but I don't know how).*
- *Being respected is key to being a happy academic.*