# KNOW THE PERSON BEHIND THE PAPERS

Today: Eva Rotenberg

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**Bio:** *Motivated by curiosity and the search for mathematical elegance, Eva Rotenberg's research focuses on graph algorithms, particularly dynamic graphs, and touches upon other areas within algorithms. Eva Rotenberg is an associate professor at the Technical University of Denmark, and holds a PhD from the University of Copenhagen from 2017. Eva Rotenberg currently holds a grant from Independent Research Fund Denmark, and starting grants from the Villum Foundation and the Carlsberg Foundation.*

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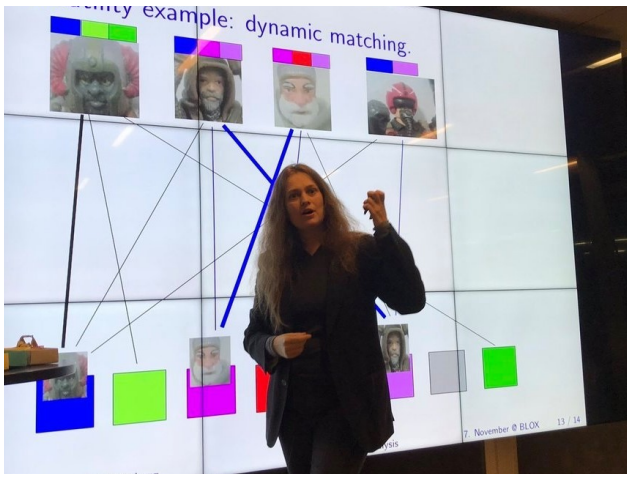


**We ask all interviewees to share a photo with us. Can you please tell us a little bit more about the photo you shared?**

**Eva:** In this picture, I am trying to illustrate the problem of *online matching with recourse* to a small general public audience, using toy figurines and origami boxes of different colours. Everyone could sympathise that having to move figurines between boxes all the time was really cumbersome, and were relieved to hear that a very simple algorithm was mathematically guaranteed to make very few moves in total. (See *Online Bipartite Matching with Amortized* $O(log^2 n)$ *Replacements* [**?**].)

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

**Eva:** Let me recommend: *"Dynamic Representations of Sparse Graphs"* by Gerth Stølting Brodal and Rolf Fagerberg [**?**].

When Jacob Holm and I were working on an algorithm for fully-dynamic planarity testing [**?**], we suddenly realised that an analysis similar to that in this paper would help us take a big step towards solving our problem.

Today, I use this paper in our advanced algorithms class when introducing the students to the topic of dynamic graph algorithms.

**Is there a paper of your own you like to recommend the readers to read?**

**Eva:** One suggestion could be: *"A Hamiltonian Cycle in the Square of a 2-connected Graph in Linear Time"*, joint work with Stephen Alstrup, Agelos Georgakopoulos, and Carsten Thomassen [**?**]. Working with Carsten Thomassen has taught me a lot about simplicity and elegance in proofs and algorithms.

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

**Eva:** The question is hard to answer because there are so many different ways of being productive, that are all necessary in order to solve problems. Different kinds of productivity flourish under different conditions. Sometimes it is even possible to just wake up with a new, vague idea, that gives a new perspective on some problem. One of my favourite ways to work is to stand by a board and discuss ideas with other people.

**What do you do when you get stuck with a research problem?**

**Eva:** Regardless of whether a specific idea works and solves the problem, it is interesting to understand the power of that idea: does it work under other assumptions or restrictions? Is there a version of the problem that it solves?

Often when we are stuck, it is because there is this one annoying case, that stands in the way of our original algorithmic idea working. Then, it can be helpful to draw and describe this particular case – I prefer first to draw it in a a very imprecise high-level way. Then starts the work of really, intensely, understanding the nature of this annoying case and why it annoys us. Hopefully, in this process, one gains insights that inspire new algorithmic ideas.

**Do you have any advice for young researchers?**

**Eva:** Sometimes, PhD students worry that they are educating themselves too broadly, working on seemingly unrelated problems within theoretical computer science, and publishing papers on very diverse topics. The way I see it, there is nothing wrong with having a broad set of skills and a broad range of interests.

**What kind of opportunities should EATCS offer to young researchers?**

**Eva:** We want to have a safe and welcoming environment for students and newcommers. It would be great to offer summer schools and workshops, e.g. in connection with 'our' conferences. We could also consider supplementing our best student paper awards with a best student presentation awards, inspired by the computational geometry community.

**Please complete the following sentences?**

- *My favorite movies are...* old. Yet, I prefer not to see the same one twice.
- *I like theoretical computer science because...* it is difficult, fun, interesting and aestestically pleasing.
- For me, collaboration ... *is key to being a happy academic.*