

DEAR READERS,

Progress does not happen on its own. Constantly driving it forward is one of the essential tasks of science. Genuine cutting-edge research always rests on a solid foundation, which must be laid as early as possible. That is why *CISPA* researchers have been involved in university teaching in Germany and beyond its borders for years, passing on their knowledge to future generations.

This is not entirely altruistic: our cooperation with *Saarland University*, *Leibniz University in Hanover*, and *Stanford University* helps us to identify young talents early on and to promote them.

CISPA accompanies young researchers on their way into academia and industry, or supports them in founding their own startups. *CISPA* offers an international environment in which they can fully realize their potential. The *CISPA Incubator* connects young researchers with big players in the industry and helps them turn their research into a marketable product. A unique space for spin-offs is currently being created at the *CISPA Innovation Campus*. International companies, such as *Airbus*, will settle here in the near future and create perspectives and jobs for IT security experts of today and tomorrow.

But every journey begins with a single step. In this new issue of



Prof. Dr. Dr. h. c. Michael Backes © Tobias Ebelhäuser

the *CISPA Zine*, you can read all about the first step on the road to becoming a cybersecurity researcher in Saarland.

Enjoy reading!

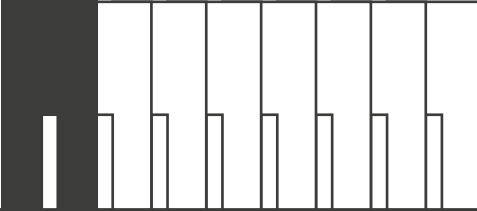
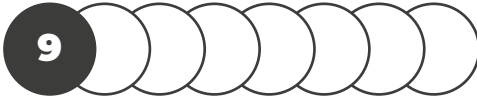
A handwritten signature in black ink, appearing to read 'M. Backes'. The signature is fluid and cursive.

Prof. Dr. Dr. h. c. Michael Backes

FACTS ABOUT CISPA

Information as of: 07/2022

Number of CISPA lecturers with *Busy Beaver Awards*



since 2007

in total

15

Busy Beaver Awards

- Prof. Dr. Dr. h. c. Michael Backes —
- Dr. -Ing. Sven Bugiel —
- Prof. Dr. Bernd Finkbeiner —
- Dr. Giancarlo Pellegrino —
- Prof. Dr. Christian Rossow —
- Dr. Michael Schwarz —
- Dr. -Ing. Ben Stock —
- Prof. Dr. Jilles Vreeken —
- Dr. Yang Zhang —



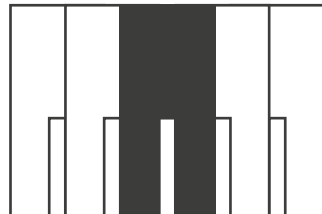
59

courses*
by CISPA
researchers
per year

Current number of research
assistants at CISPA



of which
22
are advanced
courses*



*at Saarland University

EXCELLENT TEACHING IN SAARBRÜCKEN

For years, IT security experts have been in demand like never before, and Saarbrücken is increasingly becoming a hub for all who aspire to pursue a career in this field. As early as 2014, *Saarland University* decided to launch the bachelor's degree program *Cybersecurity* in close cooperation with researchers from *CISPA* and several renowned local research institutes. Almost four years later, the master's program *Entrepreneurial Cybersecurity* was launched, combining cybersecurity studies with students founding their own startup. To meet the demand of international students, two English-language degree programs were introduced in the fall of 2021: the bachelor's and the master's in *Cybersecurity*.

CISPA Faculty Prof. Dr. Christian Rossow is responsible for the organization and orientation of the degree programs. Together with Dr.-Ing. Ben Stock, he also takes care of planning lectures. Almost all specialization courses are offered by *CISPA Faculty*. "We ourselves are in the middle of the latest IT security research day by day and therefore bring all the *hot shit* into teaching. At most universities,

maybe two or three professors know anything at all about cybersecurity. At this university, 31 senior scientists bring their expertise in various topics to the lecture hall", says Rossow.

"*CISPA* and the quality of its Faculty were the deciding factors for me to do my master's degree in Saarbrücken," says Mahnur Asif. The 26-year-old is studying *Cybersecurity* at *Saarland University*. She earned her



© Stephanie Bremerich

Prof. Dr. Andreas Zeller delivering a talk

bachelor's degree in computer science in Pakistan and had her first contact with cybersecurity issues there. "IT security experts are needed more and more urgently, which is also evident by the many attacks on companies in recent years", she says.

Tobias Berdin from Saarland became aware of the cybersecurity courses through a poster ad on his street. "I immediately was interested in the topic because it will become increasingly relevant in the future," says the 21-year-old. "I got some advice from student counselling and saw how diverse cybersecurity studies are." The 21-year-old

earned his bachelor's degree in *Cybersecurity* in Saarbrücken, Germany, and is currently enrolled in the *Cybersecurity* master's program. He is eager to delve further into cryptography.

"However, I feel that I would be able to find a job even with just my bachelor's degree. Even now, I work part-time on the security team of a fiber internet provider. Cybersecurity experts are in high demand right now," says the Saarlouis native.

With their master's degrees completed, all paths are open to Mahnur and Tobias. The degree program prepares students for a career in research and industry. But those with start-up ambitions also have every opportunity in Saarbrücken. "*Entrepreneurial Cybersecurity* is a unique study program for company founders in computer security and computer science. Already during their studies, they start finding start-up ideas and building a company. And at the end, they not only leave university with a master's degree but even with their own startup," explains *CISPA Faculty Prof. Dr. Andreas Zeller*, who plays a crucial role in the supervision of the projects. During their studies, students learn how to write a business plan, develop prototypes, analyze the market, and find customers. With success: The first spin-offs are currently positioning themselves on the market.



in the Bernd Therre Lecture Hall.

“STUDENTS HAVE SO MANY OPPORTUNITIES TO DEVELOP”

As a lecturer, CISPA Faculty Dr.-Ing. Ben Stock regularly teaches students at Saarland University the foundations of cyber and web security. As a course advisor for the bachelor's degree program in cybersecurity in both its German and English variant, the IT security researcher is the right person to talk to if you're wondering why it's worth studying cybersecurity.



Dr.-Ing. Ben Stock © Tobias Ebelhäuser

Ben, what are the benefits of a bachelor's degree in cybersecurity? Does the choice make sense even if students don't yet know exactly what they want to do later?

Interested students should not think of the bachelor's degree in *cybersecurity* (Cysec) as too specialized. It's not like you put on blinders and don't get any of the basics – on the contrary. The advantage of this degree program is that Cysec students get to see the application in IT security in addition to the computer science basics from day one and have a clear focus from the start.

But doesn't that necessarily mean that something else gets left out?

The general computer science program at *Saarland University* always includes a minor, for example, mathematics. The Cysec program does not, but offers its students a wide range of IT security courses that have no place in the regular computer science program. Only two courses that are compulsory in the computer science program are omitted in the *cybersecurity* bachelor's program. So Cysec students master all the important computer science basics just like everyone else.

Can a *cybersecurity* bachelor's degree later be used to study for a master's degree in *computer science*, and vice versa?

That's the good thing. Students have so many development opportunities and can enter at almost any point. Anyone who wants to study *cybersecurity* in the bachelor's program doesn't need any special prior knowledge. We teach them everything they need. Anyone who has studied *computer science* in the bachelor's program and wants to enroll in the master's program in *cybersecurity* can do so. Then, they only have to catch up on the introductory lectures on cryptography and security. In addition to the bachelor's and master's degrees in *cybersecurity*, *Saarland University* also offers the master's program in *Entrepreneurial Cybersecurity* in cooperation with *CISPA*. This combines IT security and computer science knowledge with a startup project. This is interesting for all those who would like to become self-employed later on. But even those who ultimately decide against entrepreneurial activity and in favor of an academic career still have the opportunity to do so. They can receive credit for most of the lectures they have attended and then switch to the Master of Science program. Especially within the first year, this is quite easy, so you don't have to worry about committing yourself too early.

What are the job prospects with a bachelor's or master's degree in *cybersecurity*?

I know people in a wide variety of positions. Some work at banks or insurance companies. Others at start-ups, in small and large companies. I don't know anyone who has had trouble finding something. If you want to stay in academia, you can do a PhD at *CISPA*. Afterwards, all paths are open to graduates. *CISPA* supports them both on their way into industry and academia, as well as in setting up their own business.

What specializations are available in the master's program in *Cybersecurity*?

The master's program is also very versatile. We currently offer 22 different specialization lectures per year – and the trend is increasing. There are various areas in which students can specialize. These include cryptography, mobile security, side channels, privacy, machine learning, and formal methods. The course of study can be completely practical, completely theoretical, or rather broad. Students decide this for themselves with their choice of courses. The master's program has only been offered since the winter semester of 2021/2022 but has already been very well received. In the past summer semester, demand has already increased enormously.

MORE GOOD NEWS

The spring hiring season was extremely successful for CISPA. With Dr. Ali Abbasi, Dr. Lea Schönherr, Dr. Xiao Zhang, Dr. Wouter Lueks, and Dr. Krikamol Muandet, five top researchers were recruited as senior scientists for CISPA. They join us from renowned research institutions such as the Ruhr-Universität Bochum, the University of Virginia, and EPFL in Lausanne.



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Dr. Yang Zhang
© Stephanie Bremerich



Congratulations, Dr. Yang Zhang. Once again, a CISPA researcher has been honored for his outstanding teaching. Computer science students at Saarland University rewarded him with the *Busy Beaver Award* for his special dedication in the seminar *Privacy of Machine Learning* in the winter semester 2021/22. The award is presented annually by the computer science faculty of Saarland University and has in the past been awarded to CISPA Faculty Prof. Dr. Christian Rossow, Dr.-Ing. Ben Stock, Dr. Giancarlo Pellegrino, Prof. Dr. Bernd Finkbeiner, Dr. Michael Schwarz, Dr.-Ing. Sven Bugiel, Prof. Dr. Jilles Vreeken and to CISPA CEO Prof. Dr. h. c. Michael Backes.

Finally, after the difficult pandemic years, CISPA is opening its doors for visitors again. On April 29, four school students visited us for Boys' Day. The CISPA Legal Department gave them exciting insights into the day-to-day work of legal assistants on this international day of action. On May 5, our center was even more crowded: at the Open Day of Saarland University, our researchers and the Science Outreach Team gave interested visitors an understanding of our study programs and the work at CISPA with workshops, lectures and hands-on activities. And in June, the CISPA Supervisory Board was able to meet again in presence for the first time and welcome Minister-President of Saarland Anke Rehlinger as a new member.



Michael Backes and
Anke Rehlinger
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Huge news: CISPA and Airbus are set to open a competence center for cybersecurity and trustworthy artificial intelligence in Saarland. The Airbus-CISPA Digital Innovation Hub will be located in St. Ingbert on the CISPA Innovation Campus. Within the next three years, around 100 experts are to be employed there. In the long term, more than 500 positions are planned! More on that, in the next Zine.

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CISPA



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ZINE

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English Edition

CAREER PATHS IN CYBERSECURITY

Four study programs at Saarland University in cooperation with CISPA will prepare you for your future career.

