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

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

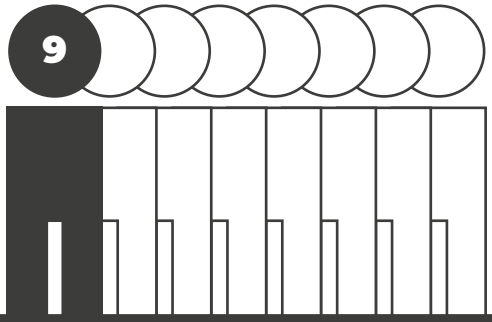
Enjoy reading!

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

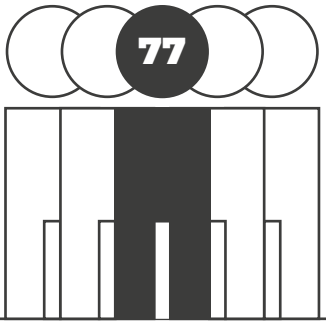
courses* by *CISPA* researchers per year

of which

22

are advanced courses*

Current number of research assistants at *CISPA*



* 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

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

in the Bernd Therre Lecture Hall.

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.

“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 Ebelshäuser

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 neccessarily 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*.

© Tobias Ebelshäuser

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. 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
© Tobias Ebelshäuser

© Tobias Ebelshäuser

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

CISPA HELMHOLTZ CENTER FOR INFORMATION SECURITY

ZINE

ZINE 3

English Edition

CAREER PATHS IN CYBERSECURITY

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

Cybersicherheit B. Sc.

- *Standard period of study → 6 semesters*
- *Language of instruction → German*
- *Admission restriction → No*
- *Application deadline → WiSe: September 30 start recommended → SoSe: March 31*
- *Tuition fees → None*

Cybersecurity B. Sc.

- *Standard period of study → 6 semesters*
- *Language of instruction → English, B2 advanced recommended*
- *Admission restriction → Yes*
- *Application deadline → WiSe: July 15 → Optional application for early admission is possible by January 15, April 1, and June 15.*
- *Tuition fees → None*

Your Bachelor Degree

Even if you have a bachelor's degree in computer science or a related subject, you can apply for master's programs or the Graduate School. However, the Graduate School only accepts students with excellent bachelor's or master's degrees.

Entrepreneurial Cybersecurity M. Ing.

- *Standard period of study → 4 semesters*
- *Language of instruction → English, C1 required*
- *Admission restriction → Yes*
- *Application deadline → WiSe: July 15 → SoSe: January 15*
- *Tuition fees → None*
- *Unique feature → Founding your own company*

Cybersecurity M. Sc.

- *Standard period of study → 4 semesters*
- *Language of instruction → English, C1 required*
- *Admission restriction → No*
- *Application deadline → WiSe: May 15 → SoSe: November 15*
- *Tuition fees → None*

Graduate School (PhD prep)

The Graduate School offers high-achieving students the opportunity to prepare for their PhD in an optimal way, supported by a scholarship and with close research connections. After a preparatory phase of between one and four semesters, students enter the dissertation phase.

Your Master's Degree

Even with a Master's degree in another subject, the path to a PhD program at CISPA is open to you.

Your Startup

Your Industry Job

Your PhD Career at CISPA

CISPA has your back

By the way, CISPA supports its PhD students on their career path – no matter what it looks like. With its outstanding training, CISPA opens doors for its graduates to the most renowned research institutions in the world. Those who do not want to go into academia benefit from CISPA's excellent networking with national and international companies. In the future, those willing to start up a business will find a unique space for their enterprise at the CISPA Innovation Campus in St. Ingbert. Major companies such as Airbus are already settling there and creating new jobs for IT security experts. In addition, the CISPA incubator supports startups with consulting and workshops. A venture capital fund of 50 million euros set up especially for CISPA enables founders to push ahead with their visions and innovative ideas.

More on careers at *CISPA*

If you are looking for more information about your career opportunities at CISPA, visit us at: https://cispa.de/de/career or contact our Onboarding and Social Activities team at onboarding@cispa.de.