University of Passau receives Alexander von Humboldt Professorship at the Faculty of Computer Science and Mathematics

The University has received its first Humboldt Professorship valued at up to 5 million euros, making it the most highly endowed research award in Germany today. In accepting the professorship at the University of Passau, computer scientist Samarjit Chakraborty will be taking up a position that brings together computer science and engineering with a view to researching sustainable computer technologies and software solutions. The planned Chair of Sustainable Computing will round out the research programme at the Faculty of Computer Science and Mathematics along the research strand focusing on "sustainable development" and "digitalisation".

"The conferral of a Humboldt Professorship is an immense achievement and a wonderful endorsement of our efforts to raise our profile as a research university. All members of the university will get to benefit from this distinction. I look forward to receiving a powerful impetus from our colleagues", said President of the University of Passau Professor Ulrich Bartosch.

How to ensure safe and secure drone-assisted delivery of goods? How do the batteries have to be recharged to combine efficiency and sustainability? An interdisciplinary approach is needed to answer these questions and Professor Samarjit Chakraborty has been pursuing such an approach for years already. His portfolio of research ranges from real-time, embedded and cyber-physical systems all the way to software design and battery management. When designing real-time systems, such as software controlling the engine or brakes in a car, he also has an eye on how to enhance the reliability and the longevity of the electronics and processors on which such software runs.

In addition to developing embedded systems for electric vehicles, new battery management systems and architectures as well as methods for reducing battery ageing play a central role in Chakraborty's research activities. His research group has developed a new concept for charge
equalisation in a battery pack using "intelligent cells". It involves equipping each individual cell with sensors and communication interfaces to enable decentralised battery management. This has led to the development of modular battery packs that render tailor-made centralised management systems redundant and considerably reduce the costs of large batteries. In addition, each individual cell is now capable of keeping records of its own history, including temperatures. Such information is key when it comes to maintenance or recycling as "healthy" cells and battery packs are now easier to identify.

Professor Chakraborty is gradually shifting his focus to mobile end devices like smartphones and has developed a web browser energy management strategy that reduces energy consumption by 55 percent. Further accomplishments include the design of the first complete Bluetooth Low Energy model and the solution to a problem encountered in Bluetooth neighbourhood discovery, which can be used for COVID-19 contact tracing for example.

"We feel fortunate that the Humboldt Foundation has decided to award the professorship to Dr Chakraborty, an exceptional and internationally distinguished academic who was nominated by the University of Passau, and are very keen to see the forthcoming negotiations leading to his appointment successfully completed. This would mark another important milestone in efforts to strengthen our university's research capacity", said Professor Robert Obermaier, Vice President for Research at the University of Passau.

"The Faculty of Computer Science and Mathematics is also extremely delighted that Professor Chakraborty has been given the Humboldt award. This conferral identifies the faculty as an outstanding academic environment for such a high-calibre researcher and, once the appointment process has been completed, provides an excellent opportunity for further development", added Professor Tobias Kaiser, Dean of the Faculty of Computer Science and Mathematics.

Samarjit Chakraborty's personal profile

After completing his computer science studies in India, Samarjit Chakraborty completed his doctorate in electrical engineering at ETH Zurich in 2003 where he was awarded the ETH Medal and the Outstanding Doctoral Dissertation Award (EDAA) for his doctoral thesis. He went on to work as Assistant Professor for Computer Science at the National University of Singapore before being appointed as Ordinary Professor for Electrical Engineering at Technische Universität München (TUM) in 2008. Samarjit Chakraborty held the Chair of Real-Time Computer Systems at TUM until 2019, heading the research group on electric vehicles at the TUMCREATE Center in Singapore at the same time, and then moved on to the University of North Carolina.
About the Alexander von Humboldt Professorship

The Alexander von Humboldt Professorship is the most highly endowed research award in Germany and awarded exclusively to top researchers who are world leaders in their field and work outside of Germany. The Humboldt Professorship is funded by the Federal Ministry of Education and Research. More information: https://www.humboldt-foundation.de

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