

# “Robots can be our friends”

Weingarten alumnus becomes Professor in Denmark

He is an award winning researcher and Associate Professor at the University of Southern Denmark in Odense. He has developed biologically-inspired walking robots. He has lived in three different countries and was a Master of Mechatronics student at Ravensburg-Weingarten University, before he achieved his doctorate at Siegen University. Dr. Tove Simpfendörfer and Professor Dr. Poramate Manoonpong have talked on the computer for five hours about a new generation of robots, the “perfect country”, “Glühwein” and helpful Germans.

**Konzepte:** Professor Manoonpong, do you like soccer?

**Manoonpong:** Yes, of course. I also play soccer.

**Konzepte:** Is there anything typically German you like about our World Champions Bastian Schweinsteiger and Philipp Lahm?

**Manoonpong:** They are very active and always play as a team.

**Konzepte:** Was soccer new for you when you came to Germany in 2002?

**Manoonpong:** No, I already played soccer and watched it in high school. Professor Paczynski always invited me to play soccer with him in Weingarten and I sometimes told him that I didn't have time due to my studies. But he told me that you have to manage your time because the more you grow the less time you will have. This was a really important lesson I learned from him outside of class – which I still remember vividly until now.

**Konzepte:** How did it come about that you chose to study at Ravensburg-Weingarten university which is located in a rural area?

**Manoonpong:** During my Bachelor studies at King Mongkut's University of Technology Thonburi (KMUTT) in Thailand, I attended a mechatronics course and joined the institute of field robotics (FIBO). That is where I did my Bachelor thesis in robotics with Associate Professors Siam Charoenseang and Djitt Laowattana. It was at this time that I first started getting into mechatronic and robotic domains and they fascinated me. After I finished my B.Eng. degree, I was planning to continue my studies abroad. Most of my friends went to the US and England. I thought that I would like to go somewhere else to gain different views, to learn different cultures and to learn another language, besides Thai and English. Germany is well known for Engineering, so that is why I selected Germany and my parents also encouraged me.

**Konzepte:** But why Weingarten?

**Manoonpong:** I was looking for a Master program in Mechatronics which was taught in English and Ravensburg-Weingarten University offered that. I applied even though I actually had no idea where Weingarten is. The only thing I knew was that Weingarten was a small city and that it might have good “Wein”. I am originally from a small town called “Nan”, located in northern Thailand. That is why I love to stay in small towns rather than big cities.

**Konzepte:** What did you learn in the Master Program which was helpful for your career?

**Manoonpong:** I took many subjects, like Electrical Drives, Micro controller, Robotics, Advanced control and Digital control, and Programming in C which are all helpful in developing robotic systems. In addition to these lectures, I also had a chance to do an internship at Vetter. During the internship, I learned how to work with other people and to think systematically and logically to solve certain industrial problems.

**Konzepte:** Besides soccer, is there anything about Weingarten you like to think back on?

**Manoonpong:** I have a lot of great memories. If I could, I would go back to ride a push bike from Weingarten to Ravensburg and Bodensee again. I love this route. I remember going on a bicycle trip to Bodensee with our German teacher. I also remember going to many pubs to drink beer and asking if I could buy the beer glasses because I wanted to take them home to Thailand as souvenirs for my parents. They gave me the glasses for free. Another thing I miss is drinking wonderful “Glühwein” in the forest during Christmas. I was also very impressed by German kindness. Once an old German guy, whom I met on the train when I came to the area for the first time, drove me to a hotel in Weingarten from Ravensburg train station.

**Konzepte:** You did your doctorate at Siegen University. How did you find your supervisor?

**Manoonpong:** I was very very lucky! Actually, I started my PhD with Professor Frank Pasemann at Fraunhofer Institute for Autonomous Intelligent Systems in Sankt Augustin. Half way through I was searching for another Professor at a University who could also be my supervisor. I then contacted about ten different professors from different Universities. Professor Roth who teaches at Siegen University and whom I knew from my Mechatronics course in Weingarten agreed to be my co-supervisor together with Professor Pasemann. Without him I might have had trouble submitting my thesis and might not be here today!

**Konzepte:** What is your doctorate about?

**Manoonpong:** My thesis focuses on sensorimotor coordination and reactive behaviour generation in complex robotic systems. I designed and developed different types of biologically-inspired walking robots used as experimental platforms. I also developed biologically-inspired neural preprocessing and control for walking robots. As a result, we could generate sensorimotor coordination and versatile reactive behaviours.

**Konzepte:** What is the long-term aim of your research?

**Manoonpong:** To understand how brain-like mechanisms including biomechanics can be realized in artificial systems (like walking robots) so they can become more like walking animals in their level of performance. In addition, I would like to develop artificial cognitive systems that can exploit their physical means for multiple functions, perform their movements in a natural, energy-efficient, self-organized, and robust way, and even learn new things and memorize them to deal with complex environments, like our real world.

**Konzepte:** Does this mean you want to create a human-like robot?

**Manoonpong:** To say "human-like" is going a bit too far! I would like to start by creating an insect-like robot which not only looks like an insect but also behaves and functions like one. I believe that emerging technologies behind the development can contribute to many applications, like rehabilitation systems and assistive systems for humans and animals with disabilities. Eventually that research could be used to build human-like robots.

**Konzepte:** Some people (especially Hollywood movie directors) think that robots will destroy our world. What is your opinion?

**Manoonpong:** I think robots will assist and help people rather than destroy the world. But of course, this depends on developers and users. Take cars, they can be very useful machines if you drive them carefully, but if you drive too fast, they might be very dangerous.

**Konzepte:** Can you understand that some people are scared of robots?

**Manoonpong:** Definitely! Robots like "Big Dog" and "Cheetah" from Boston Dynamics make people afraid for the future. These robots can run very fast and are very strong. They could easily hit and injure you. The problem is that most robots are still machines. They are different from humans who can understand what is right or wrong. However, the creators of robots are working on building more "intelligence" into them so that they cannot only react or act, but also understand things as humans do. If that day comes, they can be our friends.

**Konzepte:** Was it always clear for you that you wanted to become a professor?

**Manoonpong:** Actually, I had never thought about this! But during my postdoc at the lab of Professor Wörgötter at the Bernstein Center for Computational Neuroscience (BCCN) in Göttingen, I realized that I love to do research. I have always been curious and wanted to understand how things work. I also like to share my knowledge and experience with others. From that point on I had the belief that becoming a faculty member of a University would allow me to do what I love to do. I believe that having the title of Professor is an honor. It signifies your achievement, experience, and hard work. As a Professor I have the opportunity to support and influence the next generation of researchers who are enthusiastic in the world of robots. This is the perspective that I learned from Professor Florentin Wörgötter.

**Konzepte:** Why did you go to a research institute at a Danish university?

**Manoonpong:** I was looking for a faculty position that allowed me to do research in my field and, at the same time, teach students the subjects that I am interested in. I found an advertisement from the University of Southern Denmark which was offering exactly the position I had been looking for. Luckily I got it.

**Konzepte:** You have become a professor at the age of 36. What more do you want to achieve?

**Manoonpong:** To be 36 years old and to have become an Associate Professor is a very big achievement. What I want to achieve now is to do my best to provide new exciting results for the scientific community. I want to develop cognitive insect-like robots (my next goal) and produce high quality students who have success in their life or career. I also want to grow a family. I am going to get married soon.

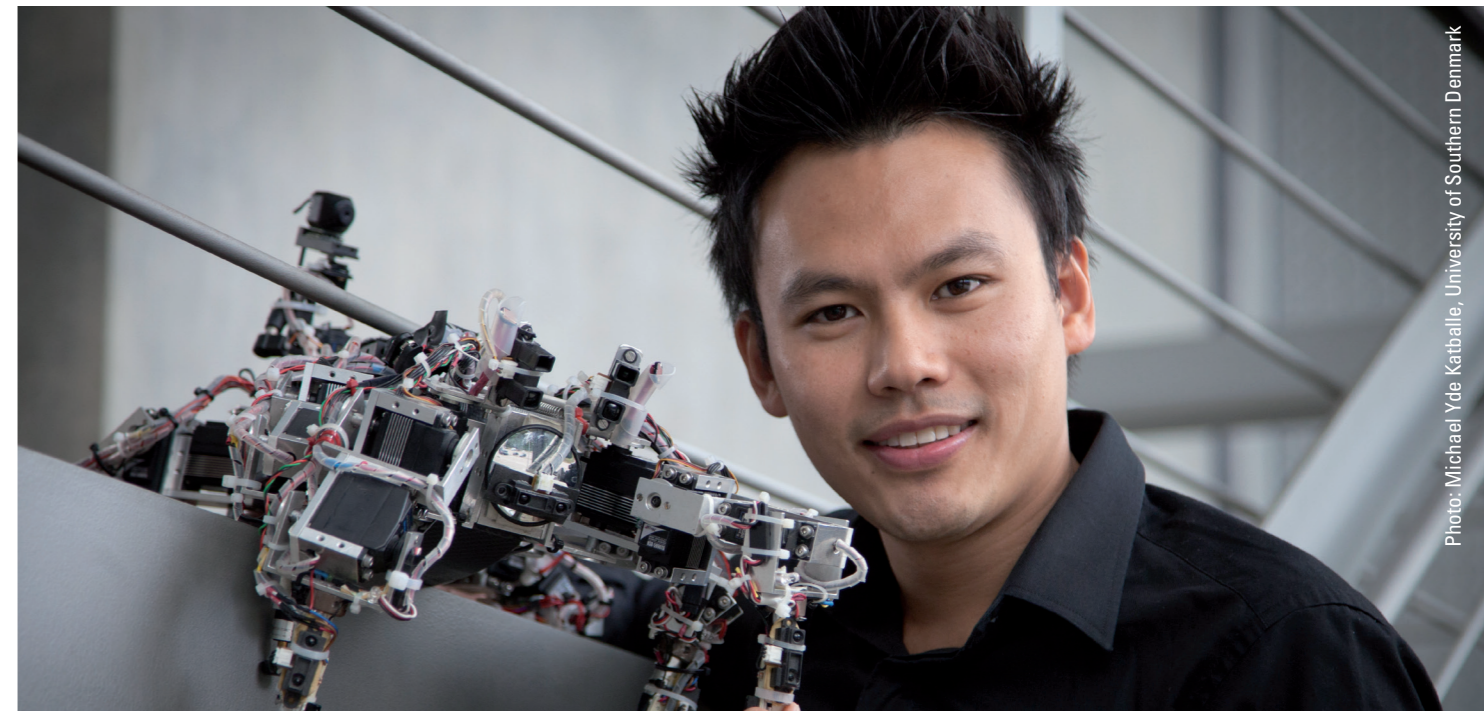


Photo: Michael Yde Katballe, University of Southern Denmark

**Konzepte:** Congratulations!

**Manoonpong:** Thank you.

**Konzepte:** Do you have a motto which you tell your students?

**Manoonpong:** My motto is: "My small step can be the next big step for science. What is happening today is the history of tomorrow. You cannot change it but you can design it!" I always try to tell my students that whatever you do, you should do your best. Otherwise, when you look back you might regret that you could have done it better. You should also do what you love, but remember that your actions will always affect tomorrow!

**Konzepte:** What should students learn at university?

**Manoonpong:** Beyond lectures and theory, I think they should learn to interact and cooperate with other students, learn to think outside the box, and learn to solve problems systematically and logically.

**Konzepte:** You have lived in three different countries: Thailand, Germany, Denmark. If you had the chance to create the perfect country, what different aspects from those three countries would you choose?

**Manoonpong:** Very difficult question, let me think ... I would choose to create a country that has good and cheap food (like Thai food, German beer and sausage), that has easy going and relaxed people who think in a systematic and logical way to solve problems. A country that has an education system that focuses on not only theory and pure lectures but also on interactivity and self-study. A country that has nice weather with different seasons, but winters those aren't too cold. Last but not least, a country which offers good support for research.

**Konzepte:** The Danish people are regarded as the happiest people in the world? Are you happy in Denmark?

**Manoonpong:** Yes, I am happy here. I have my dream job, I have good colleagues, and I can speak with most people in English (although I am learning Danish now). And I have the freedom to do my research.

**Konzepte:** Do you still have a life dream?

**Manoonpong:** Yes, I dream to have a family and become a good father and to take care of my parents. Maybe one day I will have my own robotic school where I can teach children how to build robots and pass on my skills. Maybe we could have a small coffee shop beside the school where my wife could bake cakes and make coffee for parents of the children ... ■

Professor Manoonpong intends to build more "intelligence" into robots.



Dr. Poramate Manoonpong, born 1978 in Nan, Thailand, is an award winning scientist. He studied Mechatronics at Ravensburg-Weingarten University and gained a Ph.D. degree at Siegen University. He works as an Associate Professor of embodied Artificial Intelligence at the University of Southern Denmark and as an Emmy Noether research group leader for „Neural Control, Memory and Learning for Complex Behaviors in Multi Sensorik-Motor Robotic Systems“ at BCCN, the University of Goettingen.