



The Past, Present and Future of Control: A Celebration of the Work of Panos Antsaklis

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From anti-lock brakes to cruise control to keeping airplanes in the air, controls are in every part of our daily lives. People don't often appreciate the importance of control systems until they have to live without them. Even in the human body, our blood pressure remains consistent throughout the day because it is being regulated by an intelligent system within the body— the body's own controls.

The physical phenomena of control systems were (and is) artificial intelligence well before it became a household term for the future of technology. H.C. and E.A. Brosey Professor of Electrical Engineering, Panos Antsaklis has been a leading expert in the

control arena for decades now. His contributions have paved the way for many more advancements in the field.



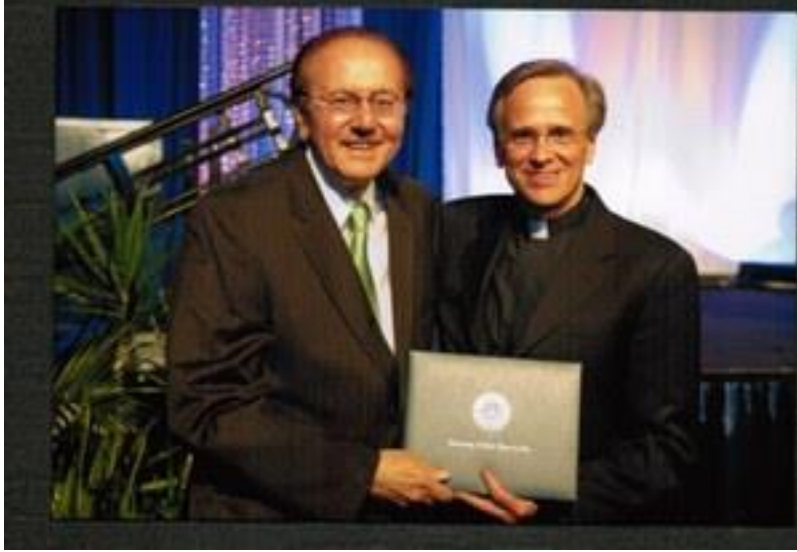
NDEE Professor Panos Antsaklis at the Quest for Autonomy Symposium

This past fall, professionals from around the globe came to the University of Notre Dame for the “Control Systems and the Quest for Autonomy” symposium to celebrate Panos’ work.

The ritual of the symposium is rooted in ancient Greece culture. It is the term coined to describe the banquet that took place after a meal, where drinking for pleasure was accompanied by music, dancing, recitals, and conversation. Naturally there was no better way to celebrate the work of this Greek native.

The event was a fantastic professional reunion of sorts. More intimate than a workshop, more technical than a social gathering. Professional relationships of former graduate students, teaching colleagues, family and friends of Panos were supported and celebrated.

“We talked and theorized about how far-reaching control systems can be in the physical world,” said Kevin Passino, a former graduate student of Panos and co-organizer of the symposium.



Panos with Father Jenkins receiving the 2013 Faculty Award.

University of Notre Dame President, Father Jenkins could not attend but sent a letter expressing his support and appreciation for Panos' work.

“He is a scholar of the first order, recognized around the world as a visionary and leader in his field,” wrote Father Jenkins. “Even as we honor and recognize him for his extraordinary body of work, knowing Panos as I do, I suspect that he prizes most, above any other recognition he may have received over the years, what your coming together for this symposium in his honor signifies. To have you—his graduate students, past and present—organize such a gathering to thank and recognize him speaks volumes, not only about his impact as a scholar and researcher but also as a mentor, teacher and friend.”

Pursuing electrical engineering (EE) was an unexpected path in life for Panos.



Panos at 7 years old with his mother in Kalamata, Greece, his birthplace.

“My family is full of medical doctors. I was expected to be a medical doctor, but I wanted to do something different,” explained Panos. Engineering caught his attention.

“I felt EE was the most difficult and prestigious, while offering the most challenge, out of all the engineering disciplines,” said Panos

He signed up for that challenge and never looked back.

The rigor of academia came natural to Panos. In his homeland of Greece, students must take a national exam to go to university and universities only accept top scoring students.

He would score well and go on to earn his bachelor’s degree in electrical engineering from National Technical University of Athens.

He then went on to study at Brown University on a Fulbright scholarship. That is where his love for control systems began.

Panos' advisor, Bill Wolovich, of Brown University recalled his first encounter with the young and enthusiastic scholar, "I can still recall meeting Panos for the first time. I think we both felt a connection during that first meeting, and I was fortunate that he chose me as his advisor. Little did I realize back then how successful Panos would become. Although his diligence and perseverance as a student were strong indications of future success."

After earning his PhD, Panos was a visiting professor at Rice university and then faculty at Imperial College in London.

His next career step would be at the University of Notre Dame, where he would build his career at NDEE for the next 39 years and counting.

"At Notre Dame, there's an atmosphere of doing research without the constant pressure to bring in funding," explained Panos. "The money is the means to the goal, but the goal is excellence in research and contributing to a better society. Teaching is a pleasure here. That is the fun part of our [faculty] job."

Panos' research addresses problems of control and automation, examining ways to design engineering systems that exhibit high degree of autonomy in performing useful tasks. His work also analyzes behavior based on mathematical models and design of control strategies for complex autonomous, intelligent, learning, and reconfigurable systems.

Application areas of this work include transportation, manufacturing, and chemical process systems, as well as computer and communication networks.

"Panos deserves such an honor. Not only because he is a top scientist, but also because he is an excellent person, a really good human being," said Notre Dame alumnus, Dimitris Kodokostas

His current research focuses on cyber physical networked embedded systems and addresses problems in the interdisciplinary research area of control, computing, and communication networks, as well as hybrid and discrete event dynamical systems.



Panos with University of Notre Dame Provost, Thomas Burish. As a member of the All-Faculty team, he was recognized for his accomplishments in teaching and research, on the 20-yard line during the Notre Dame vs. Boston College football game on November 19, 2011.

Panos has received numerous awards and recognitions throughout his career. A few of these are: an honorary PhD from the Université de Lorraine in France, Brown Engineering Alumni Medal Award from Brown University and the University of Notre Dame Faculty Award.

Panos holds fellowship standing with the Institute of Electrical and Electronics Engineers (IEEE), the International Federation of Automatic Control and the American Association for the Advancement of Science.

He was also the editor in chief for IEEE Transactions on Automatic Control, a highly prestigious leading journal in systems and control, for eight years.

Additionally, he was a founder and the president of the Mediterranean Control Association. During his time as president, he ran the MedConference in Control in the Mediterranean region for the Association, which is currently in its 27th year.



Panos with NDEE professor and former graduate student, Hai Lin (second from left)

Looking ahead, Panos is currently writing a textbook with NDEE faculty and former graduate student, Hai Lin, on hybrid dynamical systems. This is a challenging area of control systems, as it combines ideas from computer science and electrical engineering, from both the cyber and physical worlds. This textbook will be the first of its kind addressing those challenges in the classroom.

“I learned a lot from Professor Antsaklis as his former student. The most important thing that I learned from him is his passion to research, especially in his pursuit of intelligent autonomy, which has influenced my entire career path,” said Lin

Panos continues to research, teach, organize and contribute to the advancement of control systems. He looks fondly at the past and optimistically toward the future.

“I am thankful for the opportunity to have such a beautiful teaching experience here,” recalled Panos. “Working in control theory, you get a glimpse into magic.”



Panos with family at the Symposium (left to right, daughter Lily, grandchildren Alex and Natalia, and wife Melinda)