Innovative Program with Ericsson Points to the Future of Data Science Education

An innovative executive certificate program that customizes instruction for employees of Ericsson, a leading supplier of information and communication technology to service providers, could become a model for higher education in data science and information systems.

That is the hope of the chair of the Information Systems and Operations Management Department, Radha Mahapatra, and three faculty members who helped design and implement the program, Sridhar Nerur, Kay-Yut Chen, and Jay Samuel.

Brian White, Ericsson's Vice President and Head of Support and Repair for North America, agrees.

White said he is very optimistic after working with UTA professors to launch the Ericsson Executive Program, a four-course certificate curriculum taught at the company's Plano headquarters over two semesters. White watched enthusiastic employees learn and apply machine learning and artificial intelligence tools and techniques to solve challenges specific to the company using its own data.

The certificate program, White said, has provided several advantages: a cost-effective means of reskilling employees who might be unable to pursue a master's degree in data science; a direct return on investment by combining educational coursework with Ericsson-specific business needs; efficient, on-site instruction that UTA professors purposefully designed to be flexible to the company's requirements; and new opportunities to grow a culture of data-driven decision-making across the company.

"We have really strong, highly skilled people in telecom, and they either just didn't have time to go back and get a full master's degree or were trying to learn on their own, using, for example, generic data sets to try to run models," White said. "It just wasn't relevant. What we did was say why don't we develop a program customized for Ericsson, using Ericsson data sets, using Ericsson homework assignments, focusing on the key courses that we think are the most important to have."

PHOTO BY SHARON ELLMAN, ELLMAN PHOTOGRAPHY

Radha Mahapatra, chair of the Information Systems and Operations Management Department, and three faculty members helped design and implement the Ericsson program.

It took almost a year to design and refine the program, but White said the program now is eliciting interest "from across all of our different business areas.

"We found that this was a fantastic way to bring a cross section of the company together working on projects that would be meaningful across our whole organization," White said. "The professors at UTA were thought leaders. They were collaborative, flexible to the kinds of things we needed, and in the end, they were really interested in our results. It was about meaningful business impacts."

The certificate program, White and Dr. Mahapatra said, reflects how data-driven decision-making needs to evolve in corporate environments where employees have extensive experience in their fields of expertise but little or no understanding of data science.

"What many companies have done is put our data science graduates together with their own employees who have 10-15 years of industry experience," Mahapatra said. "If the domain knowledge is very dense and complex, you can't just bring in someone with a data science background and they'll be able to make sense of the data."

The executive certificate program, Mahapatra said, is part of an ongoing broader strategy to make his department and the College of Business more relevant to the business community in North Texas by developing relationships with companies and tying education to the real-world business challenges they face. Mahapatra credited Dean Harry Dombroski for encouraging industry engagement through educational programs and for making business analytics a key thrust of the College of Business.

"There is significant benefit to the institution by directly engaging with industry, and the certificate program is one such engagement," Mahapatra said.

That corporate demand for students with data science and analytics education remains strong, Mahapatra said, and the certificate program improves the classroom experience by allowing students to directly apply their learnings.

"I thought why don't we take it to the company," Mahapatra said. "Let's do it and see if it works. We found Ericsson was very willing and interested. It's not corporate training, which companies do all the time. It's not classroom teaching, which we do all the time. It's somewhat in the middle. We take classroom knowledge to the company. It's a lot of interaction that happens between the instructor and the students, and we customize – that's the key part of it – our program using the data set and problem set that are relevant to the company."

Mahapatra is quick to credit faculty members, particularly the work of Dr. Nerur, Dr. Samuel, and Dr. Chen, for designing the program.

Samuel, an assistant professor, previously worked extensively in the telecommunications industry, including as a data scientist and senior manager for service delivery at Ericsson North America Customer Support. His understanding of both data science and the telecom domain was critical in determining how classes should be taught.

Samuel recognized how difficult it is for young data scientists to come into corporate environments, learn the industry quickly, and efficiently apply what they learned in the classroom. Reskilling training to teach new data technology and techniques is helpful but less effective as a means of driving a data analytics culture for solving new business problems as they emerge.

> **"The professors at UTA were thought leaders. They were collaborative, flexible to the kinds of things we needed, and in the end, they were really interested in our results. It was about meaningful business impacts.**
>
> – Brian White,
> Ericsson's Vice President and Head of Support and Repair for North America

"What I found is that in certain industries – oil and gas, telecom, healthcare – the domain is very dense, which means when you get hired in as a young data engineer, you spend the next five to six years learning the business," Samuel said. The long learning curve can frustrate many data scientists, in turn creating a revolving door and hampering a company's goal of retaining good employees.

Nerur also sees this as a challenge for companies. "If an organization hires data scientists but doesn't have a data vision or strategy, they languish," Nerur said.

The Ericsson certificate program is designed to address that issue by providing employees who have deep industry experience a data-analytics lens through which to look at business problems differently.

Samuel, Nerur, and Chen invested time to learn about Ericsson to make data science more meaningful.

"Our contention is that this is the best way for organizations to go," Nerur said. "It works, in my opinion, by not only imparting data science knowledge but also showing how to approach problem solving within their domains. Once that takes root and people see tangible progress, it will spread throughout the organization."

Chen, who has experience in industry research and conducting data science projects with companies, taught a course in the Ericsson program on advanced analytics and found the students highly motivated because they used what they learned immediately in their jobs.

Chen said he presents some of his past industry projects as illustrations of how to apply data science. "I obviously also do that in my regular UTA classes," he said. "In this case, there is a heavier emphasis, as the students can relate to and appreciate real-world projects."

White is one who recognized such long-term benefits of the program. "The intent," White said, "was to build and reinforce a culture around data that would be very innovative, creative, and driven towards a competitive differentiation in the marketplace."