Industry Corner

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In this "Industry Corner" column, we interview Dr. Celal Savur from Intel Labs. Dr. Celal Savur received his M.Sc. and Ph.D. degrees in Electrical and Computer Engineering from Rochester Institute of Technology, USA. He works as an AI Software Solutions Engineer at Intel Labs, where he researches and develops AI solutions for edge devices. His research interests include AI/ML, Robotics, and Human-Robot Collaboration. He has published over 20 peer-reviewed papers in top-ranked venues, including IEEE THMS, IEEE JBHI, NeurIPS, CVPR, and IEEE SMC. He has chaired and co-chaired multiple IEEE conferences, including SMC, CAI, and SoSE, and regularly peer reviews for IEEE publications. Currently, he serves as co-publication chair of IEEE Conference on Artificial Intelligence 2026.

1. ***Could you tell us about your professional journey and how your interests in systems, autonomy, and AI developed over time?***

I have always been curious about how systems work together. This curiosity led me to pursue a Ph.D. at RIT, where I focused on human-robot collaboration and explored how physiological computing can help humans and robots to work more safely. At Intel Labs, I led multimodal AI initiatives and built production-grade systems, learning firsthand the importance of bridging research with real-world deployment. Currently, my focus is on leveraging the advanced capabilities of Transformer-based models and Vision-Language Models (VLMs) to drive the next generation of effective and robust physical systems deployment.

2. ***From your perspective, how have intelligent systems—ranging from automation to AI-driven decision making—evolved during your time in industry?***

Intelligent systems have fundamentally evolved through three major shifts over the last decade: moving from brittle, rule-based systems to highly adaptive, data-driven learning models capable of handling ambiguity; transitioning from performing isolated functions to achieving fully integrated, end-to-end autonomy in complex tasks; and finally, evolving from "black-box" tools to sophisticated human-in-the-loop systems that prioritize collaboration, interpretability, and safety. This trajectory has significantly enabled AI to become a true partner in complex operational decision-making.

3. ***Your work touches multiple areas, from algorithms and modeling to real-world deployment. How do you approach integrating ideas across different fields?***

I work in multiple phases. In the initial phase, I have more freedom to explore solutions from diverse fields—whether that's algorithms, perception, control theory, or human factors. This cross-disciplinary exploration helps me identify approaches that might not be obvious within a single domain. As I progress, I narrow down the scope by eliminating infeasible solutions and focusing on the most applicable ones. Once I have a few options, I evaluate the advantages and disadvantages of each approach, discuss them with the team, and make a final decision. Throughout this evaluation, we keep real-world applicability and end users in mind. Real-world deployment is critical and requires multiple iterations of feedback, refining the solution until it satisfies the end user.

4. ***What do you see as the unique strengths and challenges of doing research within an industrial R&D environment? What broad trends do you think will define the next decade of progress in autonomous or intelligent systems?***

The unique strength of industrial R&D lies in its outcome-oriented focus, providing direct access to real-world data and deployment environments for immediate validation, which accelerates the path from prototype to product. The primary challenge is the heightened demand for reliability and alignment with physical constraints, often compounded by the need to integrate AI with heterogeneous, sparse, and noisy industrial data—all while balancing long-term innovation with time-to-market pressures.

Looking ahead, the next decade of progress in intelligent systems will be defined by the convergence of multimodal and generative AI, which will transition systems from simple automation to fully autonomous, agentic AI mesh architectures. This progress will necessitate stronger ethical and regulatory frameworks and a continued shift toward edge computing and specialization to handle complex workloads locally.

5. ***As AI becomes more embedded in society, how should researchers think about responsibility, trust, and reliability in the systems they design?***

This is one of the most important questions, and one that has been avoided for too long. So far, the industry has focused primarily on the performance and quality of AI models. However, responsible AI is gaining attention as it becomes an integral part of our daily lives.

I believe researchers must treat responsibility, trust, and reliability as first-class design requirements—not afterthoughts. This means building systems with transparency and interpretability in mind, rigorously testing for failure modes, and involving diverse stakeholders early in the design process. It also requires acknowledging the limitations of our systems and communicating them clearly to end users. I have started to see research that targets these problems, and I am hopeful this focus will be broadly adopted across both industry and academia.

6. ***For students and early-career professionals interested in intelligent systems, what foundational skills or mindsets do you consider essential?***

One of the most important things in a professional career is having a strong grasp of the fundamentals. For intelligent systems, this means mathematics (linear algebra, probability, optimization), programming proficiency, and systems thinking—understanding how components interact within a larger system. Equally important is the mindset: curiosity to explore new ideas, persistence when facing difficult problems, and humility to acknowledge what you don't know. With a solid foundation and the right mindset, you can adapt as the field evolves.

7. ***Beyond technical expertise, what non-technical skills have been most helpful to you in advancing your work?***

One important non-technical skill is networking—building relationships with people who have expertise in their fields. As an individual, you cannot know everything, but knowing people who can help and guide you opens the door to collaboration and mutual learning.

Equally important is communication—the ability to explain complex concepts to diverse audiences, ensuring alignment and translating research into real-world impact. Finally, adaptability is essential, as research rarely goes as planned and adjusting to unexpected challenges is key to long-term success.

8. ***What advice would you give to young researchers who hope to bridge strong academic foundations with impactful real-world applications?***

Stop thinking you are behind just because of what you read or hear in the media. Focus on the problem you are working on, understand the fundamentals and the problem space deeply, and collaborate with other researchers. Real impact comes from sustained focus, not chasing every new trend. When you deeply understand a problem, you are better positioned to identify where academic insights can address real-world needs.