Industry Corner
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In this "Industry Corner" column, we interview Dr. Qingsong Wen, the Head of AI & Chief Scientist at Squirrel AI Learning and a PhD Supervisor at University of Oxford.

Dr. Qingsong Wen received his M.S. and Ph.D. degrees in Electrical and Computer Engineering from Georgia Institute of Technology, USA. Prior to joining Squirrel AI Learning, he worked at Alibaba, Qualcomm, and Marvell. His research interests include machine learning, data mining, and signal processing, especially AI for Time Series, AI for Education, LLM & AI Agent. He has published over 150 top-ranked AI conference and journal papers, including NeurIPS, ICML, ICLR, ACL, AAAI, and IJCAI. Currently, he serves as Chair of IEEE CIS Task Force on AI for Time Series and Spatio-Temporal Data, and Vice Chair of INNS AI for Education Section. He is also an Associate Editor for the IEEE Transactions on Pattern Analysis and Machine Intelligence.

In this interview, Dr. Wen will share his vision for the future of LLMs and AI agents in education, time series analysis, and intelligent decision-making systems. He also provides advice for young researchers wishing to enter these fields. We hope you enjoy the interview!

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1. Could you tell us a bit about your journey — from control and optimization to your recent explorations in AI agents, time-series, and spatio-temporal learning? What motivated this shift?

I received my PhD from the Georgia Institute of Technology, USA, where I worked on signal processing, machine learning, and optimization—foundations that shaped how I model complex systems and decisions under uncertainty. Since then, I've focused on AI technologies and applications, publishing over 150 papers at venues like NeurIPS, ICML, ICLR, and TPAMI, and receiving awards such as the AAAI Innovative Application Award and first place in the IEEE ICASSP Grand Challenge. What motivates me is the same throughout: leveraging cutting-edge AI to learn from the past and actively optimize the future.

2. Your recent work touches on LLM-based AI agents. How do you see their role in shaping the future of intelligent decision-making systems?

LLMs are powerful knowledge engines, but their true potential emerges when combined with agentic capabilities such as memory, planning, and tool use. This transforms them from passive models into active decision-making co-pilots. I believe this will be transformative for domains where reasoning under complexity is critical. In education, for example, LLM agents can identify a student's misconceptions and provide step-by-step guidance. In energy, they can forecast demand and optimize supply strategies in real time. Looking ahead, I see AI agents evolving into trusted partners for decision-making across an ever-widening range of fields.

3. Squirrel AI is pioneering the use of AI in education. From your perspective, what are the most exciting opportunities and challenges in applying AI to personalized learning and education?

With AI in education, I believe one of the most exciting opportunities is delivering real-time personalized learning at scale with high accuracy. At Squirrel AI, we've developed adaptive systems powered by our Large Adaptive Model, trained on over 10 billion learning interactions from 24 million students. These systems can identify knowledge gaps at a nanoscale level and recommend the right next step with more than high accuracy. The key challenge, however, lies in ensuring trust and equity: AI must be transparent, unbiased, and accessible across different socioeconomic backgrounds.

4. How do you approach bridging rigorous methods from control/optimization with the flexibility and power of LLMs and modern AI techniques?

I see it as a partnership. LLMs and modern AI models are powerful and creative—they capture broad knowledge and can generate a wide range of possibilities. Optimization and control theory then provide the rigor to evaluate and constrain those possibilities. For example, in forecasting or scheduling problems, an AI agent might propose multiple strategies, but optimization ensures the final choice is feasible, cost-effective, and robust.

5. For PhD students and postdocs exploring AI agents, time-series, or AI in education, what technical skills do you see as most critical?

A strong foundation in machine learning, reinforcement learning, and optimization is essential. In addition, solid coding and engineering skills are critical for turning ideas into practical systems. Finally, keeping up with cutting-edge AI technologies is crucial—the field moves fast, and success often depends on the ability to quickly adapt and experiment with new approaches.

6. Beyond technical expertise, what non-technical skills (communication, problem framing, collaboration, etc.) are most valuable in today's AI landscape?

Problem framing is invaluable. With today's abundance of tools and open-source models, the true differentiator is asking the right questions and defining solvable problems. Equally important is collaboration. At Squirrel AI, for example, we bring together researchers, engineers, educators, and product leaders—and the most impactful ideas often emerge at these intersections.

7. Finally, what advice would you give to young researchers who want to combine rigorous academic work with impactful real-world AI solutions?

My advice is to stay curious, stay rigorous, and stay focused on impact. Curiosity keeps you exploring new ideas, rigor ensures your work stands the test of time, and impact keeps your research connected to real-world needs. When you bring academic depth and practical relevance together, that's where research truly changes the world.