# Department of Computer Science
香港城市大學
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# Evolutionary Brain-Inspired Computing Systems Based on Memristors

**SPEAKER**  **Dr. Xinming SHI**

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**TIME** 10:00 AM - 11:00 AM

**VENUE** G7315, 7th Floor Green Zone, Yeung Kin Man Academic Building, City University of Hong Kong, 83 Tat Chee Avenue, Kowloon Tong

## ABSTRACT

As Moore's Law approaches its physical limits, traditional computing architectures encounter significant bottlenecks, particularly the von Neumann bottleneck in data-intensive applications. My research introduces an evolutionary brain-inspired computing system utilizing memristors to overcome these challenges. This innovative approach draws inspiration from both the brain and nature to forge an adaptive and efficient architecture, incorporating basic units, functional modules, and a next-generation spiking neural network. By integrating principles of evolutionary computing, this system enhances its reliability, explainability, and robustness. This work aims to revolutionize intelligent computing, ushering in a new era of trustworthy and efficient solutions.

## BIOGRAPHY

Dr. Xinming Shi is an Assistant Professor at Queen's University Belfast. She earned her Ph.D. in Computer Science from the University of Birmingham, UK, in 2023. Her research is dedicated to brain-inspired intelligence, including neuromorphic computing hardware and software, evolutionary learning, and trustworthy brain-inspired systems. She is a 2024 recipient of the Leverhulme Early Career Fellowship from the Leverhulme Trust. Dr. Shi has published extensively in top journals and conferences, including IEEE TNNLS, IEEE TC, IEEE TETCI, and ACM Transactions. She is a member of SIGEVO, part of the Conference Activities and Communications Subcommittee of the IEEE Computational Intelligence Society (CIS), and a Youth Editor of Intelligent Control. Additionally, she has served on various committees and as a reviewer for leading journals and conferences.

### All are welcome!

*In case of questions, please contact Prof LU Zhichao at zhichao.lu@cityu.edu.hk, or visit the CS Departmental Seminar Web at https://www.cs.cityu.edu.hk/events/cs-seminars/recent-cs-colloquiums.*