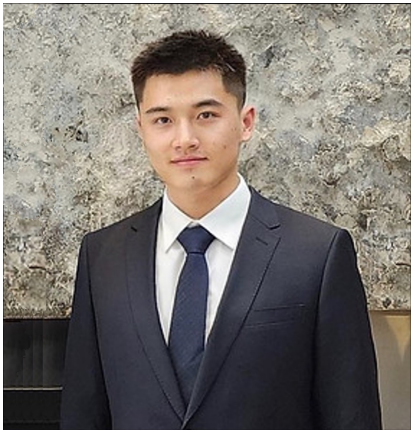
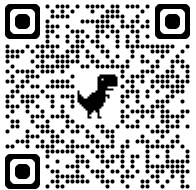




Project Lead:
**Dr. Gengrui (Edward)
ZHANG**

- Research Group of Distributed Computing and Systems (DISCOS)
- Department of Electrical and Computer Engineering
- Concordia University



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AIRBUS

Project: Digital Data Strategy for A220

Jointly driven by **AIRBUS** and **DISCOS**
Research Group of Distributed Computing and Systems



Project Goal

Optimize complex discrete aircraft manufacturing by enabling smart digitalization with cloud DBMS and AI-driven solutions



Partnership

Partnering with **Airbus Canada**, our project aims to **minimize** operational costs and **maximize** A220 production efficiency



Impact

The project strengthens Quebec's aerospace sector, cultivates multi-disciplinary talent, and advances Canada's leadership in Industry 4.0

Project: Digital Data Strategy for A220

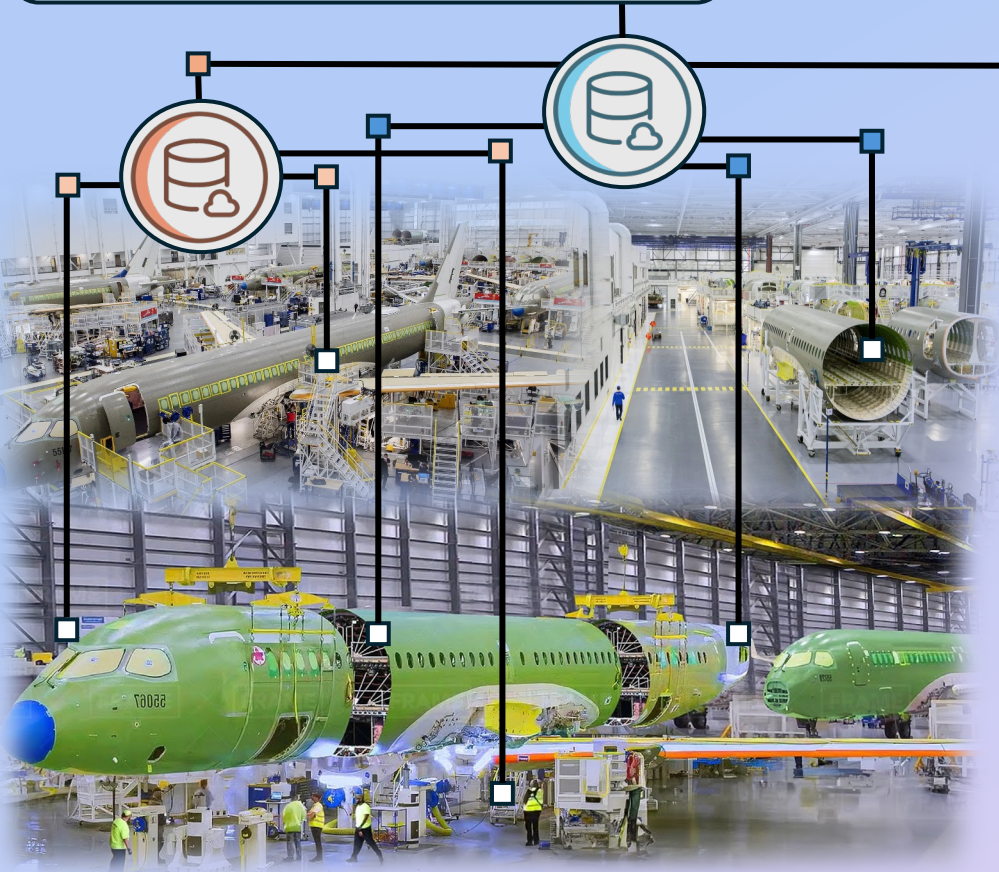
Min-Costs

- Data models and integration
- Distributed file systems
- Information retrieval
- Stream processing

Cloud DBMS

Max-Production

- Data governance
- Distributed computing
- Machine learning for discrete manufacturing



Student Recruitment for Project “Digital Data Strategy for A220”

Jointly led by Dr. Zhang’s research group at **Concordia University** and the development team at **Airbus Canada**, this project offers a unique opportunity to contribute to real-world challenges in **aerospace digitalization research** under the vision of **Industry 4.0**

We are looking for PhD and Master students:

Minimum Qualifications:

- Background in Computer Science or Computer/Software/Aerospace Engineering
- Experience in one or more of the following areas: databases, data analysis, distributed systems, machine learning
- Successful completion of courses in data structures and algorithms, operating systems, and computer networks (or similar courses)

Preferred Qualifications (for PhD students):

- Research experience (e.g., publications, research projects) in computer systems and/or machine learning
- Familiarity with linear programming and optimization techniques

Visit <https://www.gengruizhang.com/prospective-students> for contact details

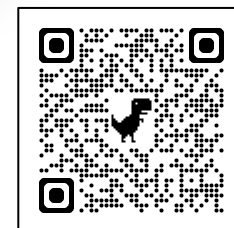


Join us!
Shape the future!

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My research develops **high-performance** and **highly scalable** distributed systems



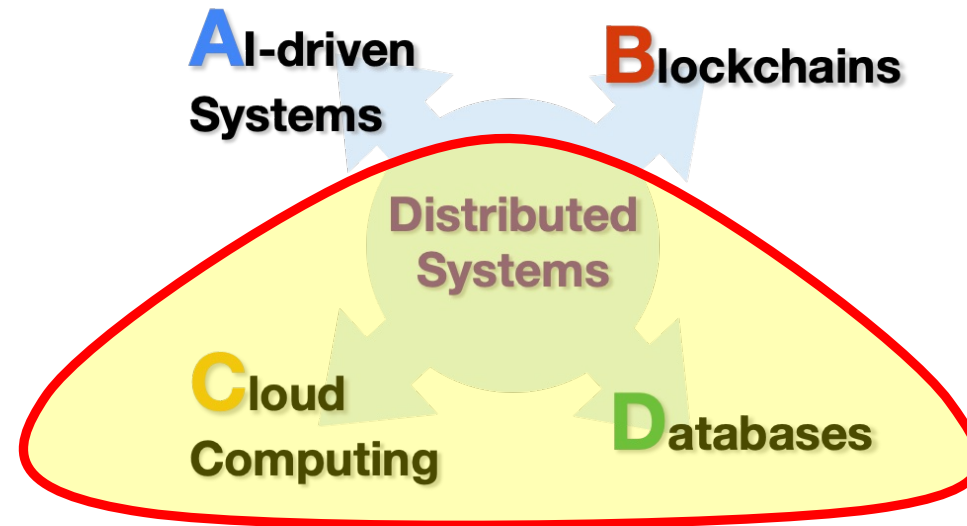
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- Concordia University



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R1: Cloud DBMS

Centralized data governance

- Cloud-native DBMS architecture
- Data lean processing
- Cost-aware cloud DB operations



Cloud DBMS for Industry 4.0

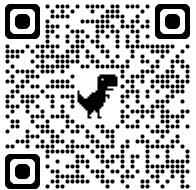
- Digitalization for aerospace complex discrete manufacturing
- In collaboration with **AIRBUS**

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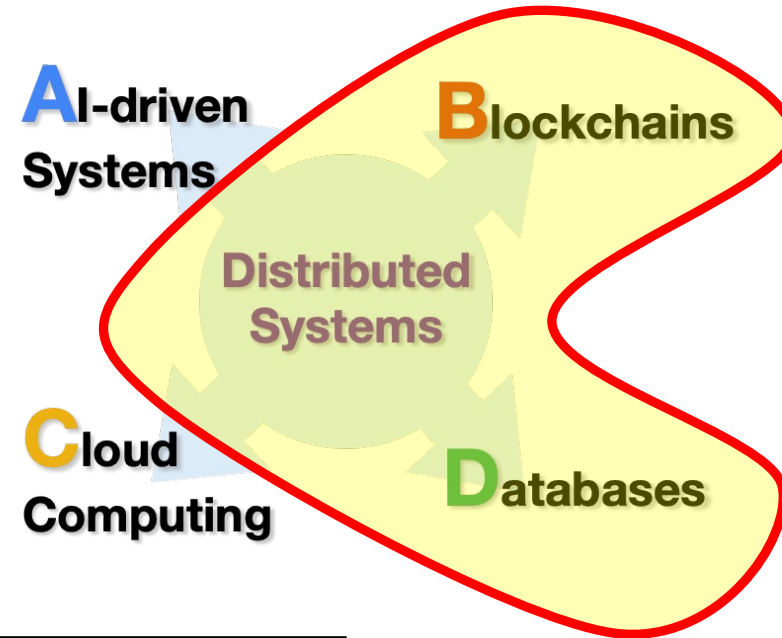
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R2: Blockchain/DLT/DBMS

Consensus and fault tolerance

- Data consistency
- Distributed transactions

Blockchain + X

- Supply chain management
- Vehicular blockchains

[Cabinet](#) [VLDB'25],

[Janus](#) [VLDB'25],

[PrestigeBFT](#) [ICDE'24],

[ESCAPE](#) [ICDCS'22]

My research develops **high-performance** and **highly scalable** distributed systems



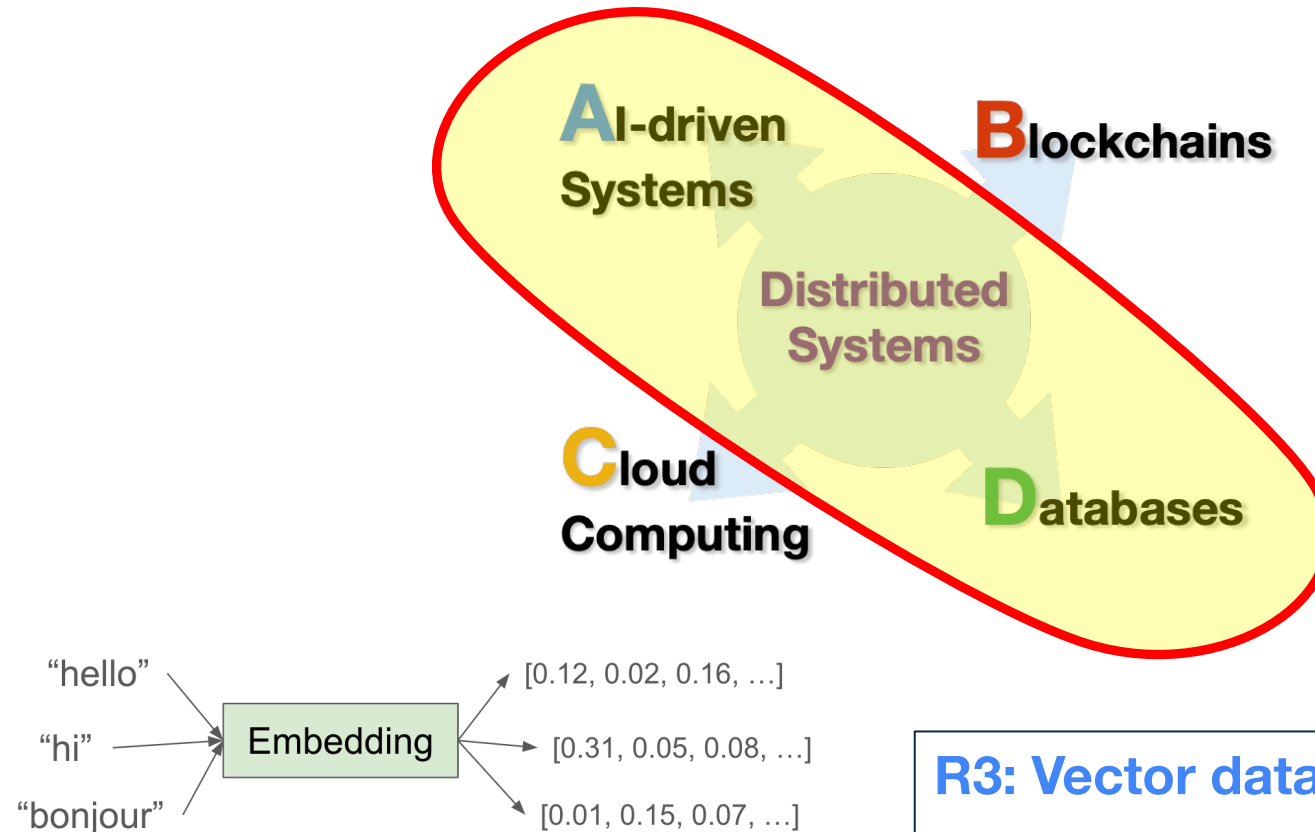
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R3: Vector databases

VDB in AI applications, especially in LLMs

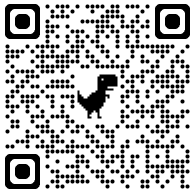
- Enable fast indexing
- Filtered/hybrid queries
- VDBMS architectures

My research develops **high-performance** and **highly scalable** distributed systems



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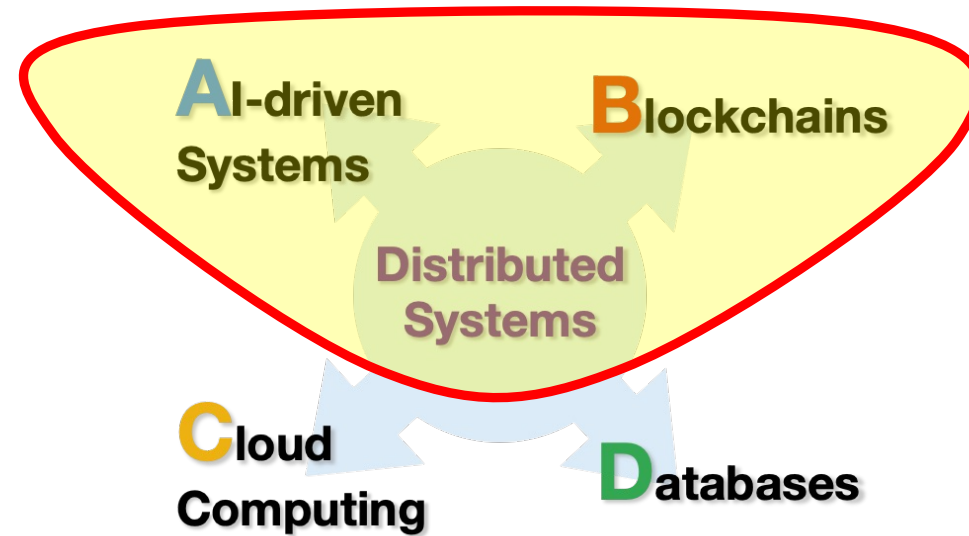
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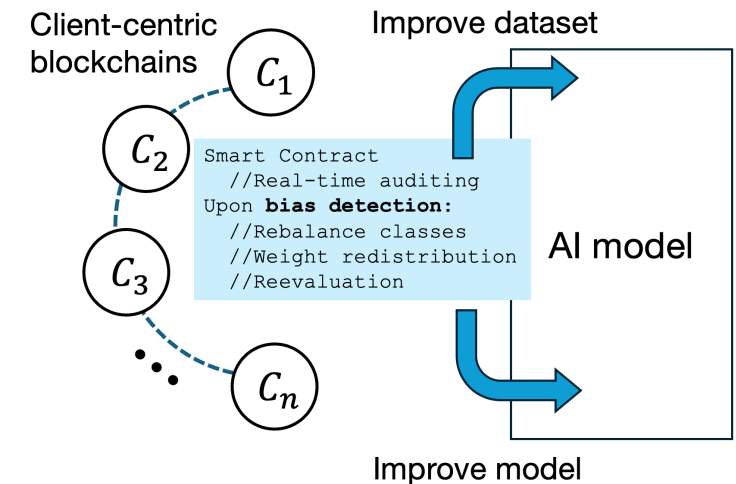
R4: Blockchain/DS + AI

Blockchain-enabled applications:

- Blockchain for AI fairness/alignment

DS-accelerated training:

- Scale-out training
- Federated ML





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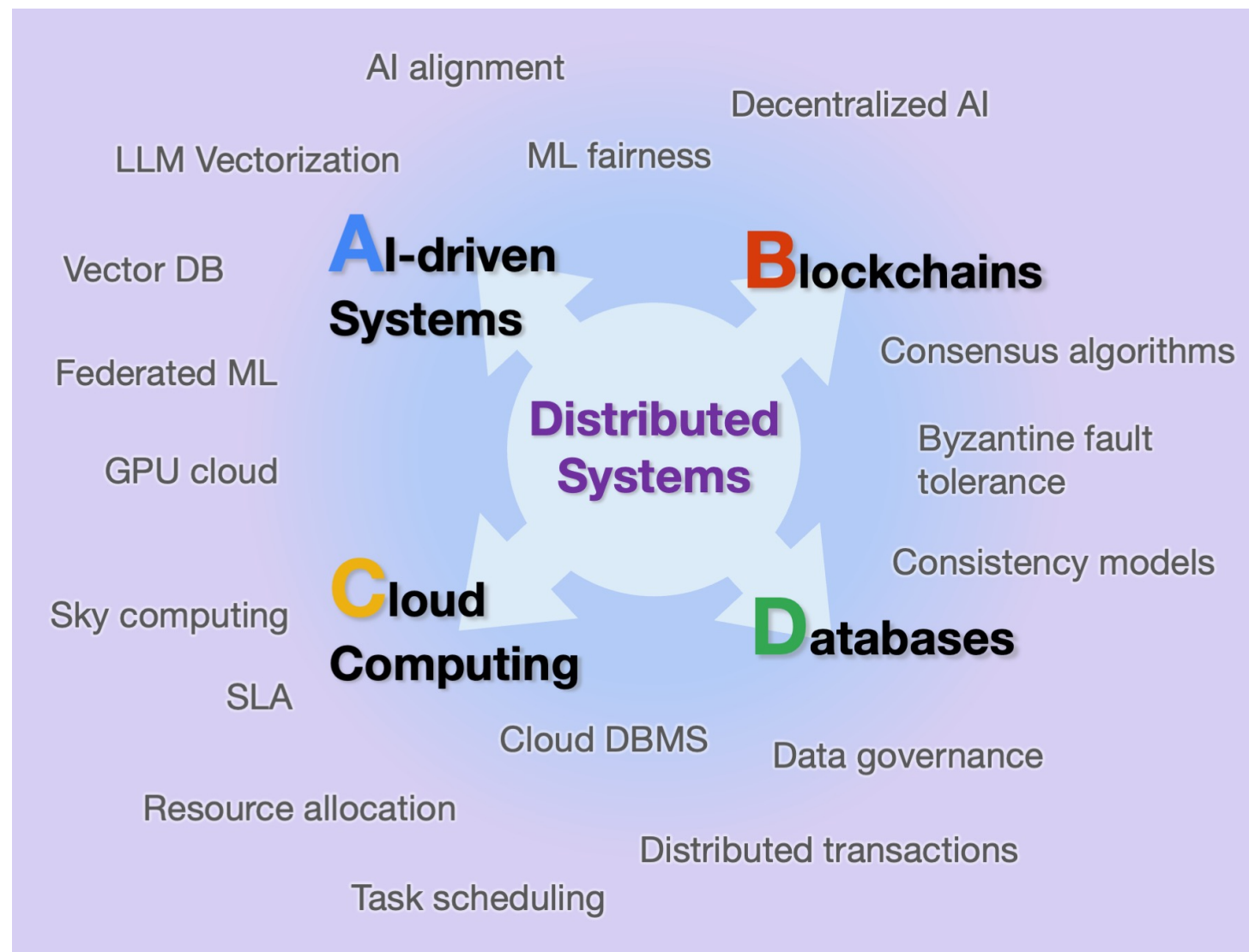


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Our Tech Stack : The “ABCD” of our research



**We address real-world problems and
advance state-of-the-art solutions!**