

PhD Application for The PhD Thesis "Decentralized Fog Computing Infrastructure Control"

Ali J. Fahs

Institut de Recherche en Informatique et Systèmes Alatoires (IRISA)
MYRIADS Team
Supervised by Professor Guillaume Pierre

Audition, 8th of June, 2017

Outline

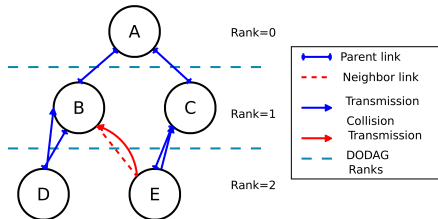
- 1 Personal Presentation
- 2 Master Thesis
- 3 State-of-the-Art for Edge Clouding
- 4 PhD Topic
- 5 Project Perspective

- A double diploma student.
 - Engineering diploma in telecommunication and computer science - Lebanese University, Faculty of engineering (Home University).
 - Master's degree in Informatics Grenoble (MoSIG) Parallel, Distributed Systems Track - Grenoble INP, Ensimag jointly with UGA, IMAG (Host University).
- Research interest: Distributed systems, Networking.
- Master's thesis "Distributed Approach for Cross-Layer Resource Allocation in Wireless Sensor Networks" Jointly between LIG and VERIMAG.

Internship objectives

- Improvement in the distributed 6TiSCH networks

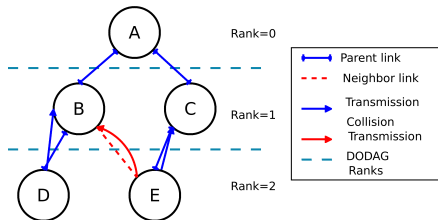
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- Improvement in the distributed 6TiSCH networks
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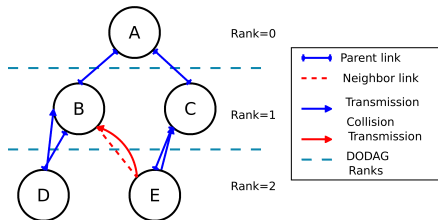
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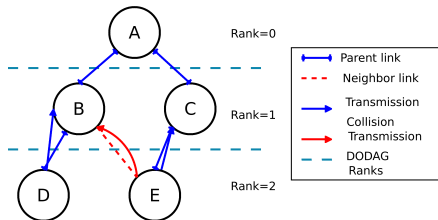
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Internship objectives

- Improvement in the distributed 6TiSCH networks
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- Lack of central entity.

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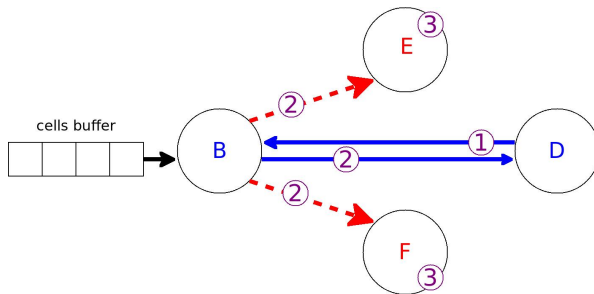


Proposed Mechanism

- Local Mutual exclusion.

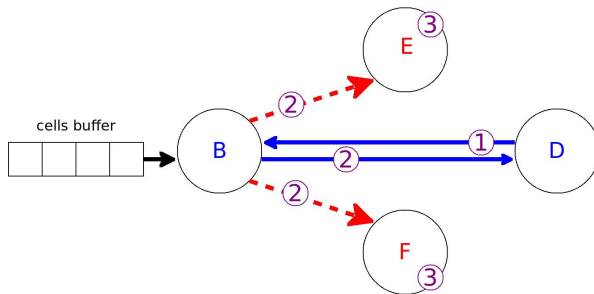
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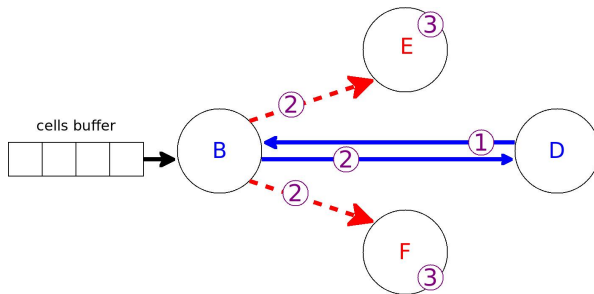
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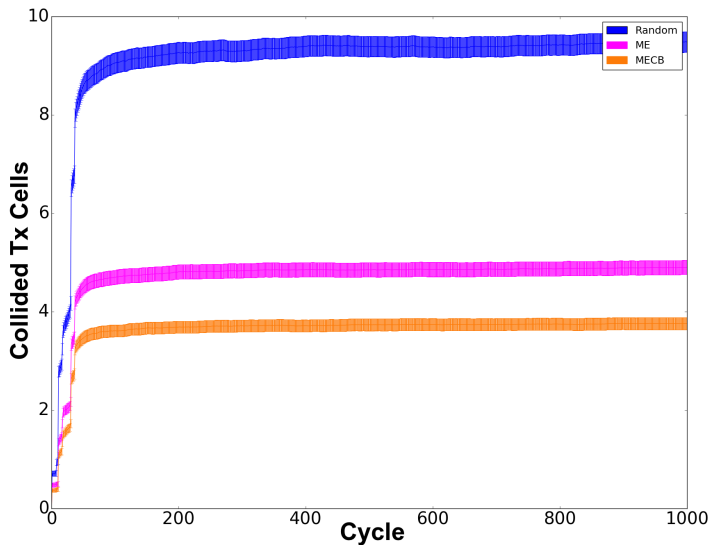


Proposed Mechanism

- Local Mutual exclusion.
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- Achieved 70% reduction in the colliding Tx cells.



Internship Results



- Clouding disadvantages: latency, mobility, *etc...*

State-of-the-Art for Edge Clouding

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- Drawbacks of the centralized: Unnecessary traffic, latency, fragile.
- Implementing very large number of potentially unreliable servers.
- leveraging without handling the complexity of application deployment, fault tolerance, reconfiguration, or elasticity.

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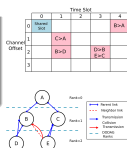
Project Perspective

- The importance of the topic.
- Solutions using Gossip algorithms.
- Advancing state-of-the-art to this hot topic.

Master Thesis

Internship objectives

- Improvement in the distributed 6TSCN networks
- Reduction of collision in TSCN Dedicated cells.
- The distributed approach causing the problem.
- Lack of central entity.



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State-of-the-Art for Edge Clouding

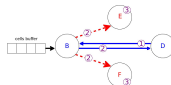
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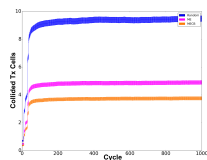
PhD Topic

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Internship Results



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Thanks for your attention!
Questions?