Daniel Campos da Silva

Curriculum Vitae

Personal data

Name	Daniel Campos da Silva.
Name in bibliography citations	DANIEL CAMPOS; CAMPOS, D.; SILVA, D. C.; DA SILVA, D. C.
Birth information	Mar-03-2000 - Feira de Santana, BA – Brazil.
Digital information	E-mail: danielcampossilva@inf.ufg.br Cellphone number: +55 62 999933908 CV in Lattes platform: http://lattes.cnpq.br/7791770936481405

Formal education/Degree

2023 - Present M. Sc. in Computer Science.
Universidade Federal de Goiás (UFG), Goiânia - GO, Brazil.
Advisor: Kleber Vieira Cardoso.
Grantee of: Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES), Brazil.

2018 - 2023 Bachelor in Computer Science.
Universidade Federal de Goiás (UFG), Goiânia - GO, Brazil.
Undergraduate final project's title: Algoritmos para compor uma ferramenta web: geração de grafos grades e cordais e solução de conjunto independente, clique e emparelhamento em grafos.
Advisor: Hebert Coelho da Silva.

2015 - 2017 Professional/Technical Course in Chemistry.
Instituto Federal de Mato Grosso - Campus Rondonópolis (IFMT-ROO), Rondonópolis - MT, Brazil.

Areas of study

Major area Computer science

Minor/specialty area Networks and wireless communication

Research projects

2023 - Present

Title: OpenRAN@Brasil - FASE 2
Description: As the radio access network (RAN) dominates the CAPEX and OPEX of mobile network operators (MNOs), we can see efforts in building efficient 5G and post-5G solutions for this part of the infrastructure. Currently, these efforts involve approaches such as open interface standardization to promote multi-vendor interoperability, disaggregation of network functions to improve flexibility, software and virtualization that provide flexibility but also greater portability, hardware independence, and evolvability. We observed support for these approaches in the initiatives of standardization bodies (e.g., 3GPP, ITU and ETSI) and company alliances (e.g., O-RAN, TIP and GSMA), publishing documents in this context, such as the new NG-RAN architecture, the evolution of the transport network to support IMT-2020/5G, cloud architecture and deployment scenarios for virtualized RAN (vRAN). In this context, OpenRAN stands out for aggregating the innovations listed and adding the use of Artificial Intelligence/Machine Learning (AI/ML) in a structured way within two types of intelligent RAN controllers, called Near-RealTime RAN Intelligent Controller (or simply, near-RT-RIC) and Non-RealTime RAN Intelligent Controller (or simply, non-RT-RIC). These controllers follow the SDN approach,

allowing the centralization of operations from different base stations. A near-RT-RIC controller is capable of handling tasks that tolerate a delay within the range between 10 ms and 1 second, while a non-RT-RIC controller handles tasks that accept delays greater than 1 second. The tasks of a near-RT-RIC controller are performed by applications known as xApps, while the tasks of a non-RT-RIC controller are handled by rApps. The identification of which tasks to handle by xApps and rApps, as well as the development of these applications are important points in OpenRAN.
My role: researcher.
Coordinator: Kleber Vieira Cardoso.
Sponsor: Rede Nacional de Ensino e Pesquisa (RNP).

2022 – 2022

Title: CloudNEXT : Evolução da Plataforma de Experimentação
Description: Cloud computing infrastructures typically offer virtual machines or container technologies. However, some research projects require access to physical servers to carry out work (such as virtualization studies, for example). The CloudNEXT project was a pilot that offers a testbed that meets this demand. The objective of this project is to study and propose improvements to this project, focusing on technologies focused on the cloud (cloud native), so that it can be implemented on the RNP network and offered to researchers in the future.
My role: researcher.
Coordinator: Sand Luz Corrêa.
Sponsor: Rede Nacional de Ensino e Pesquisa (RNP)..

Undergraduate researchs

2021 - 2022

Title: Implementação de algoritmos para geração de grids e grafos cordais e solução de emparelhamento e cliques para compor uma ferramenta de algoritmos em grafos web
Description: This work aims to expand the Graph Problems tool, which is used for visualization, problem solving and graph generation. In this Scientific Initiation we propose the implementation of algorithms for generating classes of grid, chordal and Cartesian product graphs, as well as algorithms for the maximum clique and maximum matching problems. Such implementations are not present in the "Graph Problems" tool and can help in solving applications and academic studies.
My role: researcher.
Coordinator: Hebert Coelho da Silva.
Sponsor: Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq).

2021 - 2021

Title: Método ponto-proximal para problemas de otimização vetorial
Description: This project aims to develop, analyze and improve methods in numerical optimization, both from a theoretical and computational point of view, enabling applications in different areas of knowledge. The themes of this project focus on the following topics: Augmented Lagrangian Methods; Newton's methods; Complexity and regularization of variants of the alternating multiplier method (ADMM).
My role: researcher.
Coordinator: Jefferson Divino Gonçalves de Melo.
Sponsor: Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq).

Academic production

Complete works published in proceedings of conferences

1. **SILVA, D. C.**; ALMEIDA, G. M. F.; PIRES JUNIOR, W. T.; NAHUM, C. V.; KLAUTAU, A. B. R.; ABDEL-RAHMAN, M. J.; CARDOSO, K. V.. 2024. “**Stepwise Optimal Inter-Slices Radio Resource Scheduling for Service-Level Agreement Assurance**”. In: Anais do XLII Simpósio Brasileiro de Redes de Computadores e Sistemas Distribuídos Simpósio Brasileiro de Redes de Computadores e Sistemas

Distribuídos (SBRC), 2024 - Brazil.

2. PIRES JUNIOR, W. T.; **SILVA, D. C.**; SILVA, R. S.; PINTO, L. L.; OLIVEIRA-JR, A.; ABDEL-RAHMAN, M. J.; CARDOSO, K. V.. 2024. "**QoS-aware Optimal Deployment of LoRa Gateways in UAV-enabled LoRaWANs**". In: Anais do XLII Simpósio Brasileiro de Redes de Computadores e Sistemas Distribuídos Simpósio Brasileiro de Redes de Computadores e Sistemas Distribuídos (SBRC), 2024 - Brazil.

3. **SILVA, D. C.**; SILVA, H.C.. 2022. "**Algoritmos para compor uma ferramenta web: geração de grafos grades e cordais e solução de conjunto independente, clique e emparelhamento em grafos**". In: Anais da X Escola Regional de Informática de Goiás (ERI-GO 2022), p.118, 2022 - Brazil.

Preprints

1. SANTOS, J. F.; HUFF, A.; **CAMPOS, D**.; CARDOSO, K. V.; BOTH, C. B.; DASILVA, L. A.. 2024. "**Managing O-RAN Networks: xApp Development from Zero to Hero**". arXiv preprint arXiv:2407.09619. Submitted to IEEE Communications Surveys & Tutorials.

Complete works accepted to be published in proceedings of conferences

1. **CAMPOS, D..**; ALMEIDA, G. M.; ABDEL-RAHMAN, M. J.; CARDOSO, K. V.. 2024. "**DREAMIN: Channel-Aware Inter-Slices Radio Resource Scheduling for Efficient SLA Assurance**". In: IEEE International Conference on Communications (ICC), 2025 - Canada.

Academic events

Presentations

1. (Symposium) Simpósio Brasileiro de Redes de Computadores e Sistemas Distribuídos (SBRC). 2024. "**Stepwise Optimal Inter-Slices Radio Resource Scheduling for Service-Level Agreement Assurance**".

2. (Symposium) Simpósio Brasileiro de Redes de Computadores e Sistemas Distribuídos (SBRC). 2024. "**QoS-aware Optimal Deployment of LoRa Gateways in UAV-enabled LoRaWANs**".

3. (Congress) Escola Regional de Informática – Goiás (ERI-GO). 2022. "**Algoritmos para compor uma ferramenta web: geração de grafos grades e cordais e solução de conjunto independente, clique e emparelhamento em grafos**".