João Atz Dick

Toronto, ON - Canada

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Education

MASc in ECE

Toronto, Canada

University of Toronto: Edward S. Rogers Sr. Department of ECE · Vector Institute for AI

2023 - present

Topics: Information Theory, Neural Video Compression, LLM Watermarking.

Advisor: Prof. Ashish Khisti

BASc in Computer Engineering

Porto Alegre, Brazil

Federal University of Rio Grande do Sul (UFRGS)

2022

Thesis: Latent Space Representation and Manipulation of StyleGANs · Grade: 10/10 (A)

Publications

Quality and Complexity Assessment of Learning-Based Image Compression Solutions

João Atz Dick, Brunno Abreu, Mateus Grellert, Sergio Bampi.

September, 2021

ICIP 2021

Perception Loss Function Adaptive to Rate for Learned Video Compression

Sadaf Salehkalaibar, Buu Phan, **João Atz Dick**, Ashish J Khisti, Jun Chen, Wei Yu.

December, 2024

Machine Learning and Compression Workshop @ NeurIPS 2024

Awards

2023 **Vector Scholarship in AI Recipient 2023-24** · Vector Institute
The Vector Scholarship in AI supports recruiting exceptional students to AI-related master's programs in Ontario, valued at $17,500.

2022 **BRASA PreGrad Mentee** · Brazilian Student Association (BRASA)
The PreGrad Mentorship program selects students with an excellent academic background, supporting their application process to international graduate programs.

2021 **2nd Place** · IEEE School on Digital Processing of Visual Signals and Applications (DPVSA)
Placed second at the DPVSA Computer Vision Challenge on visual sports monitoring. Awarded a fast-track into a research internship at Pix Force.

2021 **Best Undergraduate Poster Award** · IEEE Circuits and Systems Society Workshop (CASSW-RS)
Best undergraduate poster for *Quality and Complexity Assessment of Learning-Based Image Compression Solutions*.

2021 **Best Undergraduate Paper Award** · South School and Symposium on Microelectronics (EMicroSIM)
Best undergraduate paper for *Quality and Complexity Evaluation of Learning-Based Image Compression Techniques*.

2020 **DAC Young Student Fellow Best Research Presentations** · Design Automation Conference (DAC)
Ranked among the best research presentations out of 100 participants, receiving a $100 cash prize.

2020 **DAC Young Student Fellow** · 2020 Design Automation Conference (DAC)
The DAC Young Fellows program recruits promising early-stage student researchers, covering the conference's registration fees and up to $1200 in travel and accommodation expenses.

2016 **2nd Place** · Federal University of Rio Grande do Sul (UFRGS)
Ranked second among the 42 admitted students to the BASc on Computer Engineering program.

Experience

Student Affiliate Researcher

Toronto, Canada

Vector Institute

June, 2023 - present

- Affiliated to the Vector Institute for Artificial Intelligence as a MASc student researcher.

Machine Learning Engineer

Florianopolis, Brazil

Coleção.moda

October, 2022 - May, 2023

- Implemented Latent Diffusion models for image generation.
- Applied Data Science analysis concepts to consumer data.

Undergraduate Research Assistant

Porto Alegre, Brazil

Graduate Program of Computer Science · UFRGS · Advised by Prof. Manuel M. Oliveira

January, 2022 - October, 2022

- Performed research exploring latent space arithmetic in SyleGANs.
- Applied Generative Modeling and GAN Inversion concepts using TensorFlow and PyTorch.

Research Intern

Porto Alegre, Brazil

Pix Force: Computer Vision and Image Processing

January, 2022 - May, 2022

- Developed computer vision applications for sports performance monitoring.
- Improved object localization and segmentation algorithms based on concepts from scientific papers.

Undergraduate Research Assistant

Porto Alegre, Brazil

Graduate Program of Computer Science · UFRGS · Advised by Prof. Manuel M. Oliveira

July, 2021 - January, 2022

- Developed applications for the capturing step in low-light video enhancement pipelines for mobile devices.
- Utilized the Camera2 API in Android Studio to implement low-light video recording functions.

Undergraduate Research Assistant

Porto Alegre, Brazil

Graduate Program of Microelectronics · UFRGS · Advised by Profs. Sergio Bampi and Mateus Grellert

July, 2018 - December, 2021

- Performed research in diverse subjects such as IC design, video coding, and learning-based image compression.
- Developed dedicated hardware arithmetic operators for computational intensive video coding operations.
- Evaluated perceptual metrics' impact in the inter-frame motion estimation module of the HEVC video coding standard.
- Assessed the rate-distortion-complexity tradeoff present in learning-based image compression models.

Conference Presentations

IEEE Seasonal School on Digital Processing of Signals and Applications (DPVSA)

Virtual

Poster Presentation: Quality and Complexity Assessment of Learning-Based Image Compression Solutions

Challenge Presentation: Computer Vision Challenge - Soccer Match Monitoring

October, 2021.

IEEE Circuits and Systems Society Workshop (CASSW-RS)

Virtual

Poster Presentation: Quality and Complexity Assessment of Learning-Based Image Compression Solutions

September, 2021.

IEEE International Conference on Image Processing (ICIP)

Virtual

Paper Presentation: Quality and Complexity Assessment of Learning-Based Image Compression Solutions

September, 2021.

South School and Symposium on Microelectronics (EMicroSIM)

Virtual

Paper Presentation: Quality and Complexity Evaluation of Learning-Based Image Compression Techniques

April, 2021.

Design Automation Conference (DAC)

Virtual

Video Presentation: 2-minute Paper Presentation as part of the 2020 DAC Young Student Fellow Program

Current Research Presentation: Learning-Based Compression

July, 2020.

Academic Services

Reviewer

- ICML 2023 - Neural Compression Workshop: From Information Theory to Applications
- Pacific Conference on Computer Graphics and Applications 2024