

João Atz Dick

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Education

MASc in ECE

UNIVERSITY OF TORONTO: EDWARD S. ROGERS SR. DEPARTMENT OF ECE · VECTOR INSTITUTE FOR AI

Toronto, Canada

2023 - present

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

Advisor: Ashish Khisti.

BASc in Computer Engineering

FEDERAL UNIVERSITY OF RIO GRANDE DO SUL (UFRGS)

Porto Alegre, Brazil

2022

Topics: IC Design, Neural Image Compression, Computer Vision.

Advisors: Sergio Bampi, Mateus Grellert, Manuel M. Oliveira.

Publications

On Self-Adaptive Perception Loss Function for Sequential Lossy Compression

SADAF SALEHKALAIBAR, BUU PHAN, LIKUN CAI, **João Atz Dick**, ASHISH J KHISTI, JUN CHEN, WEI YU.

February, 2025.

Under Review at ICML 2025.

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.

Latents-Space Representation and Manipulation of StyleGANs

João Atz Dick.

October, 2022.

Bachelor's Thesis.

Quality and Complexity Assessment of Learning-Based Image Compression Solutions

João Atz Dick, BRUNNO ABREU, MATEUS GRELLERT, SERGIO BAMPI.

September, 2021.

ICIP 2021

Awards

Vector Scholarship in AI Recipient 2023-24 · Vector Institute

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

BRASA PreGrad Mentee · Brazilian Student Association (BRASA)

2022 The PreGrad Mentorship program selects students with an excellent academic background, supporting their application process to international graduate programs.

2nd Place · IEEE School on Digital Processing of Visual Signals and Applications (DPVSA)

2021 Placed second at the DPVSA Computer Vision Challenge on visual sports monitoring. Awarded a fast-track into a research internship at Pix Force.

Best Undergraduate Poster Award · IEEE Circuits and Systems Society Workshop (CASSW-RS)

2021 Best undergraduate poster for *Quality and Complexity Assessment of Learning-Based Image Compression Solutions*.

Best Undergraduate Paper Award · South School and Symposium on Microelectronics (EMicroSIM)

2021 Best undergraduate paper for *Quality and Complexity Evaluation of Learning-Based Image Compression Techniques*.

DAC Young Student Fellow Best Research Presentations · Design Automation Conference (DAC)

2020 Ranked among the best research presentations out of 100 participants, receiving a \$100 cash prize.

DAC Young Student Fellow · 2020 Design Automation Conference (DAC)

2020 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.

2nd Place · Federal University of Rio Grande do Sul (UFRGS)

2016 Ranked second among the 42 admitted students to the BASc on Computer Engineering program.

Experience

Student Affiliate Researcher

VECTOR INSTITUTE

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

Toronto, Canada

June, 2023 - present.

Machine Learning Engineer

COLEÇÃO.MODA

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

Florianopolis, Brazil

October, 2022 - May, 2023.

Undergraduate Research Assistant

GRADUATE PROGRAM OF COMPUTER SCIENCE · UFRGS · ADVISED BY PROF. MANUEL M. OLIVEIRA

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

Porto Alegre, Brazil

January, 2022 - October, 2022.

Research Intern

PIX FORCE: COMPUTER VISION AND IMAGE PROCESSING

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

Porto Alegre, Brazil

January, 2022 - May, 2022.

Undergraduate Research Assistant

GRADUATE PROGRAM OF COMPUTER SCIENCE · UFRGS · ADVISED BY PROF. MANUEL M. OLIVEIRA

- 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.

Porto Alegre, Brazil

July, 2021 - January, 2022.

Undergraduate Research Assistant

GRADUATE PROGRAM OF MICROELECTRONICS · UFRGS · ADVISED BY PROFS. SERGIO BAMPI AND MATEUS GRELLERT

- 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.

Porto Alegre, Brazil

July, 2018 - December, 2021.

Academic Services

Reviewer

- ICML 2023 - NEURAL COMPRESSION WORKSHOP: FROM INFORMATION THEORY TO APPLICATIONS
- 2024 PACIFIC CONFERENCE ON COMPUTER GRAPHICS AND APPLICATIONS