

# 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 · GPA: 3.8/4.0

2023 - present

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

**Advisor:** Prof. Ashish Khisti

### BASc in Computer Engineering

Porto Alegre, Brazil

FEDERAL UNIVERSITY OF RIO GRANDE DO SUL (UFRGS) · LAST 2 YEARS GPA: 9.63/10

2022

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

## Publications

### Quality and Complexity Assessment of Learning-Based Image Compression Solutions

DOI:

10.1109/ICIP42928.2021.9506136

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

September, 2021

2021 IEEE International Conference on Image Processing (ICIP)

### Learned Video Compression Using a Perception Loss Function Adaptive to Rate

SADAF SALEHKALAIBAR, BUU PHAN, João Atz Dick, Ashish J Khisti.

May, 2024

Under review.

## 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

Toronto, Canada

VECTOR INSTITUTE

June, 2023 - present

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

## Machine Learning Engineer

COLEÇÃO.MODA

- Implemented Latent Diffusion models for 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, 2019

## Conference Presentations

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

POSTER PRESENTATION: QUALITY AND COMPLEXITY ASSESSMENT OF LEARNING-BASED IMAGE COMPRESSION SOLUTIONS  
CHALLENGE PRESENTATION: COMPUTER VISION CHALLENGE - SOCCER MATCH MONITORING

Virtual

October, 2021.

### IEEE Circuits and Systems Society Workshop (CASSW-RS)

POSTER PRESENTATION: QUALITY AND COMPLEXITY ASSESSMENT OF LEARNING-BASED IMAGE COMPRESSION SOLUTIONS

Virtual

September, 2021.

### IEEE International Conference on Image Processing (ICIP)

PAPER PRESENTATION: QUALITY AND COMPLEXITY ASSESSMENT OF LEARNING-BASED IMAGE COMPRESSION SOLUTIONS

Virtual

September, 2021.

### South School and Symposium on Microelectronics (EMicroSIM)

PAPER PRESENTATION: QUALITY AND COMPLEXITY EVALUATION OF LEARNING-BASED IMAGE COMPRESSION TECHNIQUES

Virtual

April, 2021.

### Design Automation Conference (DAC)

VIDEO PRESENTATION: 2-MINUTE PAPER PRESENTATION AS PART OF THE 2020 DAC YOUNG STUDENT FELLOW PROGRAM  
CURRENT RESEARCH PRESENTATION: LEARNING-BASED COMPRESSION

Virtual

July, 2020.

## Academic Services

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### Reviewer

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