João Atz Dick

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Education

MASc in ECE   *Toronto, Canada*

UNIVERSITY OF TORONTO: EDWARD S. ROGERS SR. DEPARTMENT OF ECE   *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)   *2022*

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

Publications

DOI:

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

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

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

Porto Alegre, Brazil
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

PIX FORCE: COMPUTER VISION AND IMAGE PROCESSING

Porto Alegre, Brazil
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

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

Porto Alegre, Brazil
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

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

Porto Alegre, Brazil
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)

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

Reviewer

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