

Vítor Albiero

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My research interests include responsible AI, computer vision, machine learning, and biometrics. My current research projects focus on robustness and safety aspects of machine learning models. My past projects focused on face recognition fairness, where the main goal was to understand the causes for poor performance for protected classes (e.g. gender), as well as and improve their accuracy with mitigations.

EDUCATION

Ph.D. in Computer Science and Engineering, Specialization in Computer Vision July 2022
University of Notre Dame - Computer Vision Research Lab Notre Dame, Indiana, USA
Dissertation: Bias in Face Recognition: From Causes to Mitigation
Advisor: Dr. Kevin W. Bowyer

M.S. in Computer Science, Specialization in Computer Intelligence July 2018
Federal University of Paraná - IMAGO Research Group Curitiba, Paraná, Brazil
Dissertation: Multi-Label Action Unit Detection on Multiple Head Poses with Dynamic Region Learning, Convolutional Neural Networks and Recurrent Neural Networks
Advisor: Dr. Olga R. P. Bellon

B.S. in Computer Science July 2015
University of West Santa Catarina Videira, Santa Catarina, Brazil
Dissertation: Development of a Drone Guided Through Computer Vision Techniques

PROFESSIONAL EXPERIENCE

Research Scientist July 2022 – Present
Meta AI Menlo Park, California, USA
Working at the Responsible AI organization, doing research and engineering in the robustness and safety domains.

Graduate Research Assistant August 2018 – June 2022
University of Notre Dame Notre Dame, Indiana, USA
Research in the face recognition field using deep learning, trained and fine-tuned several CNN models with different loss functions and training demographic balances. Supervision of an undergraduate in a dataset curation procedure and gender prediction experiments.

Research Intern July 2021 – October 2021
Meta AI Menlo Park, California, USA
Researched projects involving face alignment, developed tracking models that do not require prior face detection steps.

Research Intern June 2020 – September 2020
Meta AI Menlo Park, California, USA
Researched projects involving face analysis, developed models and tools to boost internal products. Developed and published a method called img2pose, where a novel approach to face alignment was proposed, directly predicting 6 degrees of freedom without the need of prior face detection.

System Analyst April 2013 – July 2018
Cia Olsen de Tratores Agro Industrial Caçador, Santa Catarina, Brazil
System analysis and development of ERP software, Oracle database modeling and maintenance, integration between different softwares and supervision of the I.T. sector.

Internship

Cia Olsen de Tratores Agro Industrial

Customization of ERP applications, Oracle database maintenance and user support.

August 2012 – April 2013

Caçador, Santa Catarina, Brazil

Computer Technician

Online Informática

Computer equipment repair in general, support to commercial software, and coordination of attendances.

October 2010 – August 2012

Caçador, Santa Catarina, Brazil

PUBLICATIONS

Vítor Albiero, Kevin W. Bowyer, Michael C. King. “*Face Regions Impact Recognition Accuracy Differently Across Demographics*,” in Proceedings of the International Joint Conference on Biometrics (IJCB), 2022.

Aman Bhatta, **Vítor Albiero**, Kevin W. Bowyer, Michael C. King. “*The Gender Gap in Face Recognition Accuracy Is a Hairy Problem*,” arXiv preprint arXiv:2206.04867, 2022.

Haiyu Wu, **Vítor Albiero**, KS Krishnapriya, Michael C. King, Kevin W. Bowyer. “*Face Recognition Accuracy Across Demographics: Shining a Light Into the Problem*,” arXiv preprint arXiv:2206.01881, 2022.

Vítor Albiero, Kai Zhang, Michael C. King, Kevin W. Bowyer. “*Gendered differences in face recognition accuracy explained by hairstyles, makeup, and facial morphology*,” IEEE Transactions on Information Forensics and Security (TIFS), December 2021.

Vítor Albiero, Xingyu Chen, Xi Yin, Guan Pang, Tal Hassner. “*img2pose: Face Alignment and Detection via 6DoF, Face Pose Estimation*,” in Proceedings of the IEEE Conference in Computer Vision and Pattern Recognition (CVPR), 2021.

Ying Qiu, **Vítor Albiero**, Michael C. King, Kevin W. Bowyer. “*Does Face Recognition Error Echo Gender Classification Error?*,” in Proceedings of the International Joint Conference on Biometrics (IJCB), 2021.

Vítor Albiero and Kevin W. Bowyer. “*Is Face Recognition Sexist? No, Gendered Hairstyles and Biology Are*,” in Proceedings of the British Machine Vision Conference (BMVC), 2020.

Vítor Albiero, Kai Zhang, Kevin W. Bowyer. “*How Does Gender Balance In Training Data Affect Face Recognition Accuracy?*,” in Proceedings of the International Joint Conference on Biometrics (IJCB), 2020.

Vítor Albiero, Nisha Srinivas, Esteban Villalobos, Jorge Perez-Facuse, Roberto Rosenthal, Domingo Mery, Karl Ricanek, and Kevin W. Bowyer. “*Identity Document to Selfie Face Matching Across Adolescence*,” in Proceedings of the International Joint Conference on Biometrics (IJCB), 2020.

Vítor Albiero, Kevin Bowyer, Kushal Vangara, Michael C. King. “*Does Face Recognition Accuracy Get Better With Age? Deep Face Matchers Say No*,” in Proceedings of the IEEE Winter Conference on Applications of Computer Vision (WACV), 2020.

Vítor Albiero, Kai Zhang, Kevin W. Bowyer, Krishnapriya K.S., Kushal Vangara, Michael C. King. “*Analysis of Gender Inequality In Face Recognition Accuracy*,” in Proceedings of the IEEE Winter Conference on Applications of Computer Vision Workshops (WACVW), 2020.

K.S. Krishnapriya, **Vítor Albiero**, Kushal Vangara, Michael C. King, and Kevin W. Bowyer. “*Issues Related to Face Recognition Accuracy Varying Based on Race and Skin Tone*,” IEEE Transactions on Technology and Society (TTS), March 2020.

Kai Zhang, **Vítor Albiero**, and Kevin W. Bowyer. “*A method for curation of web-scraped face image datasets*,” In Proceedings of the IEEE International Workshop on Biometrics and Forensics (IWBF), 2020.

K.S. Krishnapriya, Kushal Vangara, Michael C. King, **Vítor Albiero**, Kevin Bowyer. “*Characterizing the Variability in Face Recognition Accuracy Relative to Race*,” in Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition Workshops (CVPRW), 2019.

Vítor Albiero, Olga R. P. Bellon and Luciano Silva. “*Multi-label Action Unit Detection on Multiple Head Poses with Dynamic Region Learning*,” in Proceedings of the IEEE International Conference on Image Processing (ICIP), 2018.

Júlio César Batista, **Vítor Albiero**, Olga R. P. Bellon and Luciano Silva. “*AUMPNet: simultaneous Action Units detection and intensity estimation on multipose facial images using a single convolutional neural network*,” in Proceedings of the IEEE International Conference on Automatic Face and Gesture Recognition (FG), 2017.

Flávio H. de B. Zavan, Nathaly Gasparin, Júlio C. Batista, Luan P. e Silva, **Vítor Albiero**, Olga R. P. Bellon and Luciano Silva. “*Face Analysis in the Wild*,” in Proceedings of the XXX Conference on Graphics, Patterns and Images (SIBGRAPI), 2017.

Vítor Albiero and Herculano H. De Biasi. “*Drone Autônomo Guiado Através de Templates Utilizando Visão Computacional [Autonomous Drone Guided Through Templates Using Computer Vision]*,” in Proceedings of the Congresso Sul Brasileiro de Computação (SULCOMP), 2016.

Vítor Albiero and Herculano H. De Biasi. “*Desenvolvimento de um Drone Autônomo Guiado por Meio de Técnicas de Visão Computacional [Development of an Autonomous Drone Guided by Computer Vision Techniques]*.” appears at Unoesc & Science- ACET, v. 7, p. 35-44, 2016.

RESEARCH PRESENTATIONS

Invited Presentation

University of West Santa Catarina

November 2017

Videira, Santa Catarina, Brazil

Invited to talk about my research at the Computation Week, with the title: “*Facial Expression Recognition: what is it and how it works*”.

Tutorial Presentation

XXX Conference on Graphics, Patterns and Images (SIBGRAPI)

October 2017

Niterói, Rio de Janeiro, Brazil

Presented jointly with the IMAGO Research Group a tutorial titled “Beyond Flat Faces: Facial Image Analysis and Processing in the Wild,” focusing in the “Facial Expression and Emotion Recognition” part.

Invited Presentation

SENAI/SC

May 2016

Caçador, Santa Catarina, Brazil

Invited to present the project developed for the undergraduate dissertation, titled: “*Intelligent Drone Guided Through Computer Vision*”.

TEACHING EXPERIENCE

Teaching Assistant

University of West Santa Catarina

January 2013 – June 2013

Videira, Santa Catarina, Brazil

Development of class exercises, tutorials and materials for the Algorithms Lab course taught by Professor Dr. Andrey Kuelhcamp.

MAJOR COLLABORATORS

- Dr. Tal Hassner from Meta AI.
- Dr. Michael King from Florida Institute of Technology.
- Dr. Karl Ricanek from University of North Carolina Wilmington.
- Dr. Domingo Mery from Pontifical Catholic University of Chile.

REVIEWS

- IEEE / CVF Computer Vision and Pattern Recognition Conference (CVPR)
- IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)
- Elsevier Pattern Recognition (PR)
- The British Machine Vision Conference (BMVC)

- IEEE Transactions on Information Forensics and Security (TIFS)
- IEEE Winter Conference on Applications of Computer Vision (WACV)
- Elsevier Image and Vision Computing (IMAVIS)
- IEEE Transactions on Biometrics, Behavior, and Identity Science (TBIOM)
- Springer - The Visual Computer