2024 OFDFA
Dr. Jonas Bianchi, University of the Pacific

SHORT BIOGRAPHY: Dr. Jonas Bianchi is an assistant faculty professor of Orthodontics at the University of the Pacific, Arthur A. Dugoni School of Dentistry since 2020. He earned his master's and PhD degrees from the State of Sao Paulo University and completed a postdoctoral fellowship at the University of Michigan. His research focuses on innovative applications of data science, artificial intelligence tools, and advanced 3D imaging assessments. He collaborates with institutions such as the University of Michigan, University of Sao Paulo and the University of North Carolina on NIH-funded projects. In his clinical teaching, Dr. Bianchi employs evidence-based approaches and a wide range of treatment techniques, including segmented mechanics, aligner therapy, straight-wire methods, TADs, 3D printed appliances, and orthopedic appliances.

BRIEF DESCRIPTION OF THE PROJECT: The project, titled "Can Artificial Intelligence Approaches Predict the Need for Orthognathic Surgery?", builds upon the initial work undertaken by the 2023 Orthodontic Faculty Development Fellowships (OFDFA). The primary objective is to determine the agreement and predictive performance between clinicians and machine learning models regarding the need for orthognathic surgery using cephalometric values obtained from lateral radiographs. The project aims to assess the inter-agreement and intra-agreement among orthodontists and oral maxillofacial surgeons, and compare their assessments with machine learning models. This study will leverage a substantial dataset of 920 patients and apply advanced machine learning techniques to enhance diagnostic accuracy and treatment planning in orthodontics.

HOW ORTHODONTIC EDUCATION WILL BENEFIT FROM YOUR AWARD: The award will significantly enhance orthodontic education by integrating cutting-edge AI and machine learning techniques into the curriculum. This will provide students with exposure to the latest technological advancements and prepare them for future challenges in orthodontics. The project will also foster a research-driven culture within the orthodontic program, encouraging students to engage in innovative research and develop critical thinking skills. Additionally, the development of educational tools based on AI and machine learning will aid in better decision-making processes for both students and practitioners.

THE IMPORTANCE OF THE FOUNDATION TO YOUR PROJECT. The Foundation's support is crucial for the successful execution of this project. It provides the necessary funding to acquire advanced technology, access comprehensive datasets, and facilitate collaborations with leading institutions. The Foundation's also gives credibility to the project, helping to attract additional resources and grant. By supporting this initiative, the Foundation is promoting the advancement of orthodontic research and education, ultimately contributing to improved patient care, resident education and outcomes.

HOW FOUNDATION FUNDING IS EXPECTED TO OR HAS BENEFITTED YOUR CAREER. Foundation funding has been instrumental in advancing my career by enabling me to undertake my research projects and collaborate with other institutions, while I grow in my faculty career. It has allowed me to develop expertise in AI and machine learning applications in orthodontics. The funding has also supported my participation in conferences and professional development courses, enhancing my teaching and research capabilities. Ultimately, the Foundation's support has positioned me as a leader in orthodontic research and education, contributing to my long-term career goals and professional growth.