

Adriano Reis da Silva Junior, R&D Specialist

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PROFILE

As an R&D Specialist at Alliage, I apply my biomedical engineering expertise to develop advanced software for x-ray imaging. Skilled in Java, Spring, and Python, I lead research-driven innovation across multiple projects. Separately, I have developed accessibility solutions for visually impaired users and am also creating a health-focused startup currently incubated, contributing to technologies that enhance patient care and public health.

EMPLOYMENT HISTORY

Nov 2024 — Present

R&D Specialist, Alliage

Currently working as an R&D Specialist in X-ray equipment development, I lead research, design, and optimization initiatives for advanced X-ray systems and components. My role involves integrating hardware and software, developing prototypes, collaborating with global partners, and implementing innovative solutions that enhance product performance and operational efficiency.

Key Achievements:

- **X-ray Equipment Security Implementation:** Applied the equipment blocking system originally developed for previous X-ray devices to a new intraoral scanner, ensuring secure usage and protection against non-payment.
- **International Collaboration:** Act as one of the primary points of contact with a UK-based partner on a collaborative project, leading development coordination and technical integration.
- **Firmware Optimization:** Implemented improvements in the X-ray head firmware to enhance fault detection and identify events such as electrical arcs.
- **Next-Generation Product Development:** Contributed to the development of a new X-ray product currently under validation with a partner, demonstrating superior image quality and clarity compared to existing equipment in early tests.
- **Global Market Support:** Implemented software features to meet requirements for international and domestic bids, helping maximize company revenue and brand presence.
- **Team Development & Recruitment:** Participate in the recruitment process for interns and new hires, including designing, administering, and evaluating technical tests, as well as conducting interviews.
- **Sensor Integration:** Assisted in the integration and implementation of new X-ray sensors into current equipment, enhancing system capabilities.
- **Full-Stack R&D Collaboration:** Work closely with cross-functional teams to ensure seamless hardware-software integration, prototype testing, technical documentation, and continuous improvement of X-ray technologies.
- **Code Review & Quality Assurance:** Perform code reviews and testing to maintain high-quality, reliable, and maintainable software solutions.
- **Agile Development Participation:** Actively participated in daily stand-ups and software team meetings to stay aligned with development processes and drive project progress.

Jul 2024 — Present

Freelance Software Developer / Independent Consultant

I have provided independent software development services, delivering end-to-end solutions for diverse clients in healthcare and business domains. My work spans full-stack web development, mobile applications, and embedded systems, applying cutting-edge technologies to solve complex problems.

Key Achievements:

- **Digital Order Management for Restaurants:** Developed a comprehensive system for managing digital orders, using Java, Spring, Angular, and PostgreSQL, enhancing operational efficiency for restaurant clients.
- **Customizable Link and Landing Page Platform:** Built a web platform allowing users to create personalized link pages (similar to Linktree) and landing pages, with subscription-based payment plans via credit card, using NextJS and PostgreSQL.
- **Assistive Technology Software Development:** Developed and maintained Android applications in Java and Kotlin for hardware designed for visually impaired and blind users. Corrected critical issues in existing projects and libraries, resolving memory leaks in native code, and migrated legacy applications to support new hardware and updated Android versions. Implemented AI-powered features for text recognition and image description from device cameras, significantly enhancing accessibility for end users. Provided ongoing maintenance, troubleshooting, and feature development for client-owned devices, ensuring high reliability, usability, and compliance with user requirements.
- **Full-Stack & Embedded Integration:** Combined mobile, backend, and AI technologies to deliver cohesive, user-focused solutions in complex, regulated environments.

- **Client-Focused Delivery:** Engaged directly with clients to define requirements, propose technical solutions, and ensure timely delivery of high-quality software products.

Oct 2023 — Nov 2024

Software Developer, Alliage

As a Software Developer at Alliage, I contributed to the development and enhancement of advanced medical imaging software, collaborating with cross-functional teams to implement high-quality and efficient solutions. I focused on improving existing systems, creating new functionalities, and ensuring smooth operation across both development and field environments.

Key achievements include:

- **CT Exams Viewer Enhancements:** Assisted in implementing new functionalities for the tomography viewer, adding implant visualization in axial, coronal, sagittal, and 3D views. Utilized quaternions, analytic geometry, and GLSL shaders to achieve precise 3D rendering.
- **Code Optimization:** Completely rewrote the module for adding nerves in 2D and 3D views, resolving all prior issues and optimizing the codebase from over 2,000 lines to 700 lines, improving readability, maintainability, and performance.
- **Server Performance Optimization:** Optimized the server data loading time, achieving a 7x speed improvement, which significantly enhanced the responsiveness and performance of web pages displaying database information.
- **Burn-In Monitoring System:** Assisted in developing a monitoring system for equipment burn-in procedures in the factory, integrating with the Python/Django server built during my junior role. Delivered a user-friendly dashboard for factory leaders to track progress and errors efficiently.
- **Field Support & Post-Sales Assistance:** Provided extensive support to the post-sales team, troubleshooting software issues encountered by clients and ensuring timely resolution.
- **Technical Stack & Practices:** Leveraged expertise in Java, Python, JavaScript, and full-stack development principles to deliver reliable, high-performance solutions. Applied problem-solving and analytical skills to resolve complex software challenges in a regulated healthcare environment.

This experience strengthened my ability to enhance existing systems, optimize software performance, and contribute to high-impact projects with direct operational and business benefits.

Sep 2022 — Oct 2023

Junior Software Developer, Alliage

As a Junior Software Developer at Alliage, I contributed to the full-stack development of critical systems for medical imaging equipment, gaining hands-on experience in firmware, backend, and web technologies. I was responsible for designing and implementing a comprehensive server system from scratch using Python and Django, integrated with the firmware of the devices written in C.

This system enabled real-time monitoring of equipment usage, automated blocking of devices in cases of customer default, and provided internal web interfaces for the post-sales and finance teams to manage operations efficiently. By implementing this solution, the company could offer in-house financing to clients without relying on banks, while minimizing the risk of non-payment. The robustness of this system led a banking partner to request integration for their own financed equipment, highlighting the solution's reliability and strategic impact.

- Acquired valuable experience in software development while working closely with senior developers.
- Collaborated with cross-functional teams to ensure the successful delivery of software projects.
- Developed the server backend and API in Python/Django, enabling device monitoring and management.
- Integrated firmware in C with the server to control device usage and enforce automated blocking.
- Designed internal web interfaces for post-sales and finance teams to streamline operations.
- Enabled the company to offer proprietary financing safely, reducing dependency on external banks.
- Successfully extended system capabilities to meet requirements from banking partners.
- Gained extensive experience in Java, Python, Django, C, JavaScript, and full-stack development workflows.

Dec 2021 — Sep 2022

R&D Intern, Alliage

Completed an internship at Alliage, where I gained hands-on experience in research and development. Assisted in various projects and contributed to the development of innovative solutions. Developed a strong understanding of the software development process and gained experience in Java, JavaScript, and Python.

- Gained valuable experience in research and development during an internship at Alliage.
- Implemented and configured code obfuscation to enhance application security and protect the company's intellectual property and sensitive algorithms.
- Assisted in various projects and contributed to the development of innovative solutions.
- Gained substantial experience with the DICOM protocol, which proved essential when resolving a compatibility issue during a deployment in Croatia, ensuring seamless integration with other medical imaging software.

- Developed a strong understanding of the software development process and gained experience in Java, JavaScript, and Python.

This experience not only solidified my technical skills but also honed my problem-solving abilities, attention to detail, and capacity to contribute meaningfully to high-impact, research-driven projects in biomedical engineering.

Dec 2012 — Apr 2015

Independent Java Developer – Minecraft Bukkit Plugins

Developed and published multiple custom plugins for Minecraft Bukkit servers using Java.

- Demonstrated early programming skills, problem-solving, and software design principles.
- Contributed to the community through freely available projects, showcasing initiative and technical ability at a young age.
- Projects available at: <https://dev.bukkit.org/members/adriano3ds/projects>

EDUCATION

Aug 2017 — Jun 2023

Bachelor in Biomedical Engineering, Universidade Federal de Uberlândia

Completed a comprehensive program in Biomedical Engineering, gaining a strong foundation in both engineering principles and healthcare technologies. During the course, I actively engaged in projects and activities that strengthened my technical, problem-solving, and communication skills.

Key Achievements:

- **Teaching Assistance:** Served as a teaching assistant for programming courses, supporting students and enhancing my technical and interpersonal skills.
- **Application Development:** Designed and developed applications from scratch, applying programming and problem-solving abilities to deliver innovative solutions.
- **Hackathons & Product Pitches:** Participated in hackathons, contributing to full product development cycles, including technical implementation and creation of compelling presentations.
- **Healthcare Project:** Developed a system to monitor infants' respiratory patterns during sleep, providing alerts for irregularities and improving safety and health monitoring.
- **Software-Biomedical Integration:** Gained hands-on experience integrating software with biomedical applications, building practical and impactful healthcare solutions.

RESEARCH, PROJECTS & PUBLICATIONS

Jun 2020 — Apr 2021

Extension & Research Project – Geiger-Müller Radiation Count

Participated in the development of a versatile Geiger-Müller radiation counter for ionizing radiation monitoring in public environments and individuals. The project aimed to improve public safety and awareness regarding radiation exposure, combining low-cost electronics and biomedical instrumentation. This research culminated in a published book chapter.

Key Contributions:

- Designed and implemented electronic circuits for high-voltage generation (400 V DC) and stable operation of the Geiger-Müller tube.
- Integrated the detector with a microcontroller for real-time data acquisition, processing, and field deployment.
- Collaborated in a multidisciplinary team (undergraduate and graduate students under faculty supervision).
- Contributed to data collection, statistical analysis, and preparation for field testing.
- Co-authored the book chapter “Projeto Versátil de Adaptação do Contador Geiger-Müller para Aferição e Quantização de Radiação Ionizante no Ambiente e em Pessoas”, published in Engenharia 4.0: A Era da Produção Inteligente (Pascal, 2021).
- Available at: https://www.peteletricaufu.com.br/static/ceel/artigos/artigo_541.pdf
- Book chapter available at: <https://editorapascal.com.br/2021/04/12/engenharia-4-0-a-era-da-producao-inteligente-vol-06/>

Jul 2019

Academic Project – Biofizz: Quiz Game on Biophysics

During my Biomedical Engineering program, I independently developed a complete quiz-style educational game using Unity and C# for the Biophysics course. The project combined teamwork for question creation with my individual responsibility for all aspects of programming, game design, and implementation.

- Designed and coded the full game mechanics, including two distinct modes: Race Mode and Time Challenge.

- Created a structured system for point progression, penalties, and turn management.
- Delivered a multiplayer experience supporting up to 4 players.
- Collaborated with classmates who provided the question database, while leading all software development.
- Source code and full project available at: <https://github.com/Adriano3ds/Biofizz>

SKILLS	Version Control	Skillful	Problem-solving	Experienced
	Engineering	Experienced	Troubleshooting	Experienced
	Software Development	Experienced		
LANGUAGES	Portuguese	Native speaker	English	Highly proficient