Daniel Arbeláez Álvarez

Software engineer · AI applied to justice · Lecturer and researcher

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Sources

PROFILE

Software engineer and researcher in LegalTech and AI. Employee of the Judicial Branch of Colombia since 2014 (a biographical fact); in a personal capacity I design and deploy free software for judicial document management.

Technologies: Languages and frameworks: Python (FastAPI, Streamlit, pandas), Java, C# and ASP.NET, R, JavaScript. AI and data: OpenAI API, Anthropic API, LangChain, spaCy, OCR and NER, PostgreSQL and SQLite, SQL Server, Power BI, RStudio. Automation and RPA: UiPath, Power Automate, Bash, Docassemble. Infrastructure: Docker, GitHub Actions, nginx, Easypanel, Linux VPS.

AgilEx

DNDA copyright registration (3 November 2022) and 2,466 downloads on GitHub as of 30 October 2026. As «LAW», in the 2023 Legal Innovation Map by Legal Hackers Medellín and ALTCO. Sources: map · releases.

JusticIALab 2024

Winner, Data-Driven Justice category, as a member of team Marduk. Mention of Recognition from the Superior Council of the Judiciary (Agreement PCSJA24-12237). Sources: CSJ · UTDI · Agreement.

Cuaderno Activa

Two articles on LegalTech and artificial intelligence applied to justice: one published (2024) and one in press.

EXPERIENCE

Judicial Branch of Colombia · Employee
November 2014 – present

Tecnológico de Antioquia · Adjunct lecturer
February – November 2024

EDUCATION

Specialization in Artificial Intelligence
Fundación Universitaria Internacional de La Rioja (UNIR Colombia) · In progress, since 2025

Software Engineering
Tecnológico de Antioquia · 2021

LEGAL SOFTWARE DEVELOPMENT

AgilEx Since 2022 · MIT — Builds a case file's electronic index from file metadata; it does not assess content.

TYBABot 2025 · MIT — Guides users on Justicia XXI Web (TYBA). (template by another author)

DisciplinaJudicialAI 2026 · MIT — Guides users on the judicial disciplinary regime. (template by another author)

Docassemble Expert 2025 · MIT — Helps write and debug Docassemble interviews. (template by another author)

TutelaBot (adaptation) 2025 · MIT — Guides users on the tutela and the right of petition. (original project)

PUBLICATIONS AND TALKS

State of the Art of Symbolic AI Planners and Their Potential in LegalTech: Towards Neurosymbolic Architectures for Procedural Truth. Cuaderno Activa, in press (in Spanish).

Guided Interviews for the Optimization of Judicial Processes: an Approach from LegalTech. Cuaderno Activa, 16(1), 2024 (in Spanish). doi:10.53995/20278101.1858

Workshop "From court-office problems to AI solutions", ASOJUDICIALES (Medellín, 2026), shared session, pro bono. (poster)

Talk "Free software for digital justice", FLISoL Medellín 2025. (event)

Shared talk at the Academic Conference on AI and Its Impact on Justice (Medellín, 2024): I presented the Marduk case. (programme, in Spanish)

RECENT TRAINING

Artificial Intelligence in Judicial Decisions: Case-Law Analysis and Criteria for Applying the Law · Escuela Judicial Rodrigo Lara Bonilla · 2026 · 5 h

Fundamentals of Generative Artificial Intelligence (postgraduate level) · Escuela de Posgrado Newman · 2026 · 80 h

Microsoft .NET + Angular training cycle · Escuela Judicial Rodrigo Lara Bonilla e Intelligent Training · 2025 · 48 h

Artificial Intelligence Bootcamp, intermediate level · MinTIC – Talento Tech (Universidad de Antioquia y Universidad de Caldas) · 2025 · 159 h

In total, 5 diploma programmes (512 h) and 38 certified courses and activities since 2020.

LANGUAGES

Spanish (native); English A2 (technical reading).