

# FABIÁN A. ARANEDA-BALTIERRA

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## EDUCATION

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- **M.S. Computational Analysis and Public Policy.** The University of Chicago. Illinois, USA. June 2023
- **Engineer in Computer Science.** Universidad de Concepción, Chile June 2018
- **M.A. in Strategic Communication and Business.** Universidad del Desarrollo. Concepción, Chile February 2017
- **Journalist.** Universidad San Sebastián. Concepción, Chile. June 2014

## PROFESSIONAL EXPERIENCE

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**Assistant Research Scientist.** *University of Illinois Urbana-Champaign.* Urbana, IL. [Oct 2023 – To Date]  
At the *Center for Astrophysical Surveys* (CAPS) within the *National Center for Supercomputing Applications* (NCSA).

- Developed, deployed, optimized, and actively maintain a robust data pipeline for the [SCiMMA](#) project's usage metrics, enabling real-time dashboards, comprehensive analysis, and enhanced reporting.
- Pioneered the use of large language models (LLMs), Retrieval-augmented generation (RAG) systems, and vector databases to enhance data accessibility for the [Vera C. Rubin Observatory's LSST](#) project, by developing generative AI experimental chatbots.
- Lead the development of a Django web application that integrates global astronomical instruments availability information to coordinate observation using the Kafka-based [Hopscotch](#) alert system (one of the SCiMMA project's services).
- Part of the international team that is implementing the *Target of Opportunity Program* (ToO) at the Rubin Observatory, designing and coding software that communicates the Hopscotch platform with the [Simonyi-LSST Telescope's Alert System](#).

**Data Analyst** (internship, remote). *United Nations Development Programme (UNDP)*, New York City, NY. [Jan – May 2023]

- Maintained data pipelines to collect, clean and store data from government agencies across the globe.
- Conducted data analysis and created reports and dashboards to support decision making.
- Analyzed the “Sustainable Development Goals” metrics to improve their evaluation methodologies.

**Teaching Assistant.** *The University of Chicago*, The Kenneth C. Griffin Department of Economics. Chicago, IL [Mar – Jun 2023]

- Successfully conducted in-person R labs for undergrad students of ECON 11310 (*Big Data and Better Decisions*), teaching them how to use classification and predictive Machine Learning (ML) models applied to business and economics.

**Research Assistant** (internship, remote). *Yale University*, Tobin Center for Economic Policy, New Haven, CT. [Jun – Dec 2022]

- Supported [ConsiliumBots](#) team (education NGO) by creating REST APIs, back-end applications, and predictive machine learning models for AI bots that assist high school students in decision making.

**Software Engineer.** (remote) *LawLogix* (an Equifax Company), Phoenix, AZ. [Nov 2019 – Jun 2022]

- Successfully updated, corrected errors, and implemented new features for [Immigration Case Management](#), a comprehensive cloud-based software for immigration cases management in the United States of America.
- *Project Highlight:* as a part of a sub-team, we created a Google Chrome extension for our clients that decreased the time to fill the DS-160 online form in a 95%, using existing data from our data bases.

**Executive Coordinator.** Effective Access to Higher Education Program (PACE), *Universidad de Talca*, Chile. [Aug 2015 – Dec 2018]

- Successfully led a 22-person interdisciplinary team, and managed a USD \$2.0 million budget, to locally implement a national public policy that grants equitable access to university education for talented high school students from vulnerable backgrounds.
- Designed and led the implementation of a Software as a Service (SaaS) platform, from the data modeling to the dashboards design, to monitor academic performance and well-being in the first-year students with academic and psychological accompaniment.
- Analyzed annual results from the Chilean University Selection Test (PSU) using SQL, Python, and Excel to generate strategic insights that strengthened Universidad de Talca's outreach to prospective students and improved admissions performance.

**Junior Consultant.** *Periodistas Asociados*, strategic communication consulting firm, Concepción, Chile. [Mar 2014 – Jul 2015]

- Designed and implemented communication plans and strategies, aligned with our clients' business goals, to achieve their positioning and effective bonding with local authorities and communities.
- Planned and performed quantitative and qualitative studies, and press analysis, to diagnose our clients' recognition and approval levels, as a result of the implemented strategies.

## SKILLS

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- **Coding:** Python, JavaScript, HTML, CSS (*proficient*). MATLAB, Bash (*comfortable*). C, C++, C#, Objective-C (*familiar*).
- **Data Bases:** PostgreSQL, MySQL, InfluxDB (*proficient*). Weaviate, MongoDB, AWS S3, DynamoDB (*comfortable*).
- **Data Analysis/ML:** R, Numpy, Pandas, BeautifulSoup, Selenium (*proficient*). PyTorch, Scikit-Learn, Keras, Stata (*comfortable*).
- **Data Visualization:** Plotly, Matplotlib, D3.js, Grafana (*proficient*). Tableau, ArcGIS, Geopandas, Seaborn, PowerBI (*comfortable*).
- **Web Development:** Django, Flask, UI/UX Design (*proficient*). Fast API, React, Bootstrap, Angular, Vue, NodeJS, .Net (*comfortable*).
- **Workflow Tools:** Agile Scrum, Jira, Confluence, Git, GitHub, Figma, Docker, Kubernetes, Terraform, Unix, LaTeX (*proficient*).
- **Soft Skills:** Project Management, Team Leadership, Problem Solving, Event Planning, Public Speaking, Writing, Bilingual.

## ACADEMIC EXPERIENCE

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**Programming Instructor** (part-time). *Universidad Técnica Federico Santa María*, Santiago, Chile. [Mar 2019 – Aug 2021]

- Developed, delivered and evaluated the “Python for Data Analysis” course for Industrial Maintenance Engineering students.

**Instructor** (part-time). *Taught in-person classes* in the following subjects and institutions:

- **Computer Programming** (Engineering students), *Universidad de Concepción*, Chile. Mar – Aug 2021
- **Introduction to Business Management** (Business students), *Universidad de Viña del Mar*, Chile. Mar – Aug 2019
- **Science, Technology and Society** (Medical Technology students), *Universidad de Talca*, Chile. Aug – Dec 2016
- **Oral and Written Communication** (Dentistry students), *Universidad de Talca*, Chile. Mar – Aug 2016
- **Communication Aspects in the Thesis Project** (Engineering students), *Universidad de Talca*, Chile. Mar – Dec 2016

**Research Assistant** experience while studying engineering at the **Universidad de Concepción**:

- **“Using Neural Networks to Find Patterns in Lexical Availability Surveys”**. 1 Semester  
Processed data and trained simple neural network models to find patterns using MATLAB.
- **“Using Genetic Algorithms to Correct RAPD Images”**. 1 Semester  
Experimented with the hybridization of genetic algorithms with metaheuristic techniques to automatically improve Random Amplified Polymorphic DNA images with MATLAB.

**Teaching Assistant** experience while studying engineering at the **Universidad de Concepción**:

- Taught practical classes to reinforce the theoretical concepts taught by the professors.
- Led independent classroom work with groups between 20 and 70 students for the following classes:
  - **Algebra**. Taught to students from various engineering majors. 5 Semesters
  - **Linear Algebra**. Taught to students from various engineering majors. 5 Semesters
  - **Software Engineering**. Taught to Computer Science Engineering students. 1 Semesters

**Teaching Tools**: Canvas, Moodle, Gradescope, Kahoot!, Prezi, GitHub Ed, Google Classroom, Zoom, Teams, Slack (proficient).

## PUBLICATIONS

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- **Baeza, I.; Gutiérrez, N.; Araneda, F.; Sepúlveda, M.** (2018). Caracterización de primera generación de estudiantes PACE que ingresan a la Universidad de Talca [Characterization of the first-generation PACE students enrolled into the Universidad de Talca]. Cuadernos de Inclusión en Educación Superior, Univ. de Santiago de Chile (ISN 0719-9953). Download [\[here\]](#)

## AWARDS AND SCHOLARSHIPS

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- **Harris School of Public Policy Scholarship**. The University of Chicago, USA. 2021 - 2023
- **International Mobility Scholarship**. Santander Bank, Chile. 2013
- **Social Sciences School’s Full Scholarship**. Universidad San Sebastián, Chile. 2009 - 2013

## COURSES AND CERTIFICATES

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- **DevOps Certificate**. Purdue University, Online Postgraduate Certification Program (ongoing). Jan. - Dec. 2025
- **Digital Tools for Data Journalism**. Knight Center for Journalism in the Americas, U. of Texas, Austin. August 2015
- **Scientific Communication**. Dirección de Extensión, Universidad de Concepción, Chile. January 2015
- **Crisis Management and Effective Communication**. Universidad del Desarrollo. Concepción, Chile. October 2014
- **Certificate in Organizational Communication** University of Wisconsin Eau-Claire, USA. May 2014

## LEADERSHIP AND VOLUNTEERING

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**Technology Facilitator** *University of Illinois Urbana-Champaign*, Urbana, IL [Mar 2025 – To Date]

- Work with the Department of Urban and Regional Planning to support the project “*Unveiling Black History: The African American Heritage Trail in Cairo, Illinois*” by developing a web-based digital archive to document and showcase its findings. The platform will incorporate experimental narrative techniques powered by generative artificial intelligence to enhance public engagement.

**Data Researcher**. *FootShot*, Santiago, Chile. [Aug 2020 – Mar 2022]

- Chilean start-up focused on preventing diabetic foot disease by applying machine learning to thermal image analysis. As a volunteer researcher, I evaluated the feasibility of various predictive modeling techniques for image-based diagnostics.

**Other volunteering and leadership experiences**:

- **Volunteer Instructor**. Infocap Institute, Concepción, Chile. Apr 2014 – May 2015
- **Social Media Director**. Chippewa Valley School Journalism Association, Eau Claire, Wisconsin, USA. Aug – Dec 2013
- **Vice-President**. International Student Association. U. of Wisconsin-Eau Claire, USA. Aug – Dec 2013
- **Reporter**. InsideEC, digital magazine. University of Wisconsin-Eau Claire, USA. Jan – Jun 2013
- **Leadership and Social Programs Manager**. Colegio San Agustín, Concepción, Chile. Mar 2008 – Dec 2012