ATILIO BARREDA II
data.atil.io | github.com/lolusername

RESEARCH STATEMENT

I develop tools and frameworks that bridge theoretical and computational insights with humanities-driven perspectives. My work explores how interdisciplinary approaches—informed by open education, formal methods, poststructuralist theory, and indigenous knowledge systems—can shape technical systems. I design analytical frameworks and software that visualize complex textual relationships, employ privacy-preserving algorithms, and democratize computational thinking through intuitive interfaces and historically contextualized data representations. My projects, which include multi-document network analysis tools, privacy-first image processing pipelines, and interactive machine learning platforms, aim to reveal and critically engage with socio-technical assumptions in computational architectures.

RESEARCH INTERESTS

- Human–Computer Interaction (HCI)
- Data Visualization
- Digital Humanities
- Privacy-Preserving Technologies
- Machine Learning
- Natural Language Processing
- Socio-technical Systems
- Critical Data Studies
- Formal Methods

EDUCATION

MS in Data Analysis and Visualization
CUNY Graduate Center (2021-2025)

Capstone Thesis: *Multi-Document Graph Visualizer: Bridging Computational Text Analysis and Interactive Visualization for Large-Scale Text Corpora.* Available Online

Developed the Multi-Document Graph Visualizer (MDGV), integrating BERT-based transformers for semantic encoding, BERTopic for dynamic topic modeling, and spaCy for named entity recognition to analyze and visualize relationships within extensive text corpora.

- **Relevant Courses:** Interactive Data Visualization, Big Data Analytics, Feminist Text Analysis

BA in Modern Culture and Media (Critical Theory & Media Production)
Brown University (2008-2012)

- **Relevant Courses:** Human Cognition, Advanced Documentary Production, Computer Generated 3D Imagery, Video and the Body

ACADEMIC & RESEARCH EXPERIENCE

Research Assistant
Simons Laufer Mathematical Sciences Institute (SLMath), UC Berkeley (Upcoming 2025)
Mathematical Sciences Research Institute Undergraduate Program (MSRI-UP)

- Collaborating with lead director Professor Robin Wilson, Dr. Omayra Ortega, and a co-graduate student assistant to guide 18 undergraduates through a six-week intensive REU. Overseeing day-to-day progress, providing academic support, and fostering independent thinking among student teams. Coordinating structured lectures, research activities, and final technical presentations to culminate in publishable findings.

Visiting Scholar
The Institute for Mathematical and Statistical Innovation, University of Chicago (2023)
Co-Creating a Community Data Visualization Tool with Community Partners

- Developed VECINA, a bilingual (English/Spanish) online platform that integrates environmental, flooding, healthcare, and K–12 education data with contextual narratives to empower community advocacy in Olneyville, Providence, RI. Collaborated with community partners (Nuevas Voces and WRWC) and technical experts to create an interactive, neighborhood-based mapping tool for informed decision-making and policy change.

Visiting Researcher
The Institute for Computational and Experimental Research in Mathematics, Brown University (2022)
Data Science and Social Justice: Networks, Policy, and Education

- Participated in the Data Science and Social Justice Summer Institute, applying interdisciplinary methods to data analysis and visualization.

Digital Humanities Fellow
Mina Rees Library, CUNY Graduate Center (2022)

- Indexed digital projects and performed preliminary data analyses and visualizations, documenting methodologies for scholarly use.

Processing Fellow
Processing Foundation (2022)

- Awarded funding to prototype an open-source whiteboard application to enhance data science education using P5.js.

Conference Presentation
Digital Humanities Institute, CUNY Graduate Center (November 2021)

- Presented "Embedded Humanities in Data Systems," exploring indigenous Khipu in relation to modern database systems for the Digital Humanities Institute.

TEACHING EXPERIENCE

Adjunct Lecturer
New York City College of Technology (August 2020 – Present)

- Courses taught: Introduction to Data Science, Machine Learning Fundamentals, Introduction to NoSQL, Database Administration

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RELEVANT PROFESSIONAL EXPERIENCE

Founder & Data Engineer
Studio Miski (January 2020 – Present)

- Led full-stack development for data platforms using Vue.js/Nuxt, D3.js, FastAPI, and Node.js.
- Architected interactive visualization systems for complex datasets and developed ETL pipelines for clients in academic, activist, and startup sectors.

Open Educational Resources Coordinator
Queensborough Community College (January 2025 – Present)

- Research-focused role supporting faculty in developing and integrating OER.
- Utilize data science techniques to assess and inform educational impact.
- Advance scholarly insights on open education practices.

Senior Software Engineer
Global Healthcare Exchange (June 2023 – June 2024)

- Developed and optimized interactive data dashboards integrated with Django REST APIs.

Frontend Engineer
Calvin Klein (June 2019 – January 2020)

- Maintained and updated CalvinKlein.com using JavaScript and HTML/CSS.

Frontend Engineer
IBM Turbonomic (July 2017 – June 2019)

- Implemented an AWS-based WordPress development workflow with SCSS and automated deployment strategies.

User Interface Engineer
Sentient Jet (June 2015 – July 2017)

- Designed and implemented data visualization dashboards using AngularJS.

SELECTED PROJECTS & OPEN-SOURCE CONTRIBUTIONS
Available on GitHub

- **Multi-Document Graph Visualizer**
  A tool designed for researchers, journalists, and activists to discover and visualize hidden connections across diverse documents. Built with Python and TypeScript, it features interactive network graphs (using D3.js), automatic text processing, and relationship detection.
  Technologies: Python, TypeScript, D3.js, Natural Language Processing, Network Analysis.
- **Redact: Privacy-First Face Detection Tool**
  A web-based solution that protects identities by automatically detecting and covering faces in photos. The tool processes images entirely on the client-side, removing all metadata to ensure privacy.
  Technologies: JavaScript, Face-API.js, HTML5 Canvas, WebGL, Neural Networks.
- **Image Portfolio Builder**
  An elegant system that allows photographers and digital artists to build high-resolution portfolio websites effortlessly. It automates image optimization for multiple devices and formats.
  Technologies: Svelte, Vite, TailwindCSS, Sharp, Firebase, Node.js.
- **Open-Source Web-Based Whiteboard App**
  Developed with support from the Processing Foundation, this prototype whiteboard application enables STEM educators to demonstrate data-centric and machine learning techniques interactively.
  Technologies: P5.js, ML5.js, JavaScript, Firebase.
- **W.E.B. DuBois Data Visualization Recreation**
  A modern reinterpretation of W.E.B. DuBois' "Black Data Portraits," this project uses D3.js to visualize historical data on social and economic conditions.
  Technologies: D3.js, Firebase.
- **Live User Touch: Interactive Video Art Installation**
  An installation that transforms videos into dynamic artworks through real-time processing. User movements control visual effects such as color grading and contrast, bridging art and technology.
  Technologies: JavaScript, WebGL, HTML5, CSS3.
- **Citation Networks in the Digital Humanities**
  A project using NetworkX and Matplotlib to graph relationships between authors and their cited works, highlighting interdisciplinary connections in digital humanities research.
  Technologies: Python, NetworkX, Matplotlib.