

Fausto J. German Jimenez

(Updated January 2025)

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Education

Ph.D. Student in Computer Science and Applications

Expected May 2028

Master of Science in Computer Science and Applications

Expected December 2025

Virginia Polytechnic Institute and State University (Virginia Tech), Blacksburg, VA

Research Areas: Deep Learning; Info. Retrieval, Extraction, and Visualization; LLMs; Interactive Sensemaking

Advisor: [Dr. Chris North](#)

Honors: Master's GEM Fellowship at ANL

Bachelor of Science in Computer Science

December 2022

The University of North Carolina at Charlotte, Charlotte, NC

Degree Concentration: Data Science

Honors: Summa Cum Laude; Chancellor's list (3x); Dean's List (1x)

Publications

Fausto German, Brian Keith Norambuena, Mauricio Matus, Diego Urrutia, Claudio Meneses. "Semi-Supervised Image-Based Narrative Extraction: A Case Study with Historical Photographic Records", Findings of the 47th European Conference on Information Retrieval (ECIR), 2025 (Accepted)

Relevant Experience

Graduate Research Assistant

August 2023 - Present

Virginia Tech, Blacksburg, VA

- Designing and developing algorithms to extract coherent narratives from unstructured text and visual data using deep learning embeddings and graph-based models, improving efficiency and utility when compared against state-of-the-art narrative extraction algorithms
- Integrating large language models with electronic theses and dissertations to enhance the search, retrieval, and summarization of academic documents, streamlining access to long-form scholarly information
- Conducting independent and collaborative research on the application of artificial intelligence algorithms for structured information retrieval and synthesis in graph-based environments

Data Science and Analytics Intern – Apple TV+

May 2024 - August 2024

Apple, Culver City, CA

- Conducted in-depth analyses with large amounts of data using advanced data science methodologies, including entropy, divergence, and deep learning embeddings, to enhance user engagement and retention
- Derived actionable insights and strategic recommendations to optimize internal recommender systems and content distribution, improving personalization and user experience

Global Technology Summer Analyst – Data Science

June 2022 - August 2022

Bank of America Corporation, Charlotte, NC

- Developed a topic modeling pipeline using sentence transformers and clustering of word-vector embeddings to predict relevant hashtags on incident reports, enhancing the efficiency of incident retrieval for employees
- Engineered Python-based natural language processing models to extract actionable insights from unstructured documents, enabling efficient decision-making across diverse stakeholders

Research Scholar – Office of Undergraduate Research (OUR)

January 2022 - April 2022

The University of North Carolina at Charlotte, Charlotte, NC

- Developed and evaluated machine learning models for predicting aflatoxin insurance claims using over eight years of temperature data in the U.S.
- Achieved 98% accuracy on the test set, resulting in a highly accurate model for insurance claim assessments
- Effectively communicated research outcomes by creating an abstract and poster presentation for UNC Charlotte's 2022 Undergraduate Research Conference (Award Winner)

Other Experience

MS GEM Fellow – Python Software Engineer

June 2023 - August 2023

Argonne National Laboratory, Lemont, IL

- Implemented vectorization techniques using Numpy, resulting in up to 21x speed improvement (avg=15x) in the performance of the NE-COST program
- Developed a schema for the input parameters of NE-COST using the SON format, minimizing redundancy and maximizing modularity in the definition of the inputs
- Integrated parts of the NE-COST program into the NEAMS WorkBench GUI for streamlined use within the organization

Visual Analytics Instructional Assistant (TA)

August 2022 - May 2023

The University of North Carolina at Charlotte, Charlotte, NC

- Provided guidance and assistance to 65 students during office hours, troubleshooting programming challenges and ensuring their success in class
- Expedited problem resolution by actively engaging in web forums and emails and offering timely assistance on class assignments
- Collaborated closely with fellow instructional assistants to promptly evaluate and grade assignments

Undergraduate Research Assistant – Web Development

August 2021 - December 2021

The University of North Carolina at Charlotte, Charlotte, NC

- Architected and implemented a web application using Vue.js, optimizing the collection of crop-field data for training machine learning models
- Programmed a connection between the platform's front-end and back-end using Axios.js and RESTful APIs for user authentication and to display dynamic content

Personal & Course Projects

ViTopic – A Topic Modeling Pipeline for Image Data

Coursework; 2023

Developed and implemented a concept-guided topic modeling system for image data by leveraging vision transformer

embeddings to facilitate automatic image grouping based on conceptual similarities.

<https://github.com/faustotnc/vitopic>

U.S. Currency Recognition – A Computer Vision Project

Coursework; 2022

Executed a complete computer vision project, from data collection and labeling to model selection and training, resulting in an object detection system that could identify U.S. currency in images and live video, using transfer learning techniques on ConvNet models.

<https://github.com/faustotnc/us-currency-recognition>

Ranker – A PageRank Visualization Tool

Personal; Beta – 2021

Designed and developed a tool to help students and practitioners better understand the PageRank algorithm using web development technologies like React, Redux, and Cytoscape-Js.

<https://ranker.faustogerman.com>

Hinton – An Interpreted Programming Language

Personal; Alpha – 2021

Engineered and implemented a multi-pass compiler and a stack-based virtual machine for the “Hinton” interpreted programming language, using Rust as the implementation language.

<https://github.com/hinton-lang/Hinton>

Posters and Presentation Abstracts

- Fausto German, Edward Hoffman, Nicolas Stauff, and Jia Zhou. 2023. *NE-COST: Building a Future-Proof Cost-Estimation Algorithm for Complex Nuclear Fuel Cycles*. Learning On the Lawn at Argonne National Laboratory. Argonne National Laboratory, Lemont, IL
- Fausto German and Gabriel Terejanu. 2022. *In Search of a Predictive Model For Aflatoxin Insurance Claims Based on Temperature Data*. UNC Charlotte Undergraduate Research Conference. The University of North Carolina at Charlotte, Charlotte, NC

Professional Service

- Reviewer, Journal on Intelligent Data Analysis (IDA), 2023-Present

Technical Skills

- **Data Science & M.L.:** PyTorch, Scikit-Learn, Numpy, Pandas, Statistical Learning, Graphical Models, A.I. Optimization Algorithms, Explainable A.I., SQL, Altair, Seaborn, Matplotlib, Hadoop, PySpark
- **Deep Learning:** Large Language Models (LLMs), Transformer Models, Recurrent Neural Networks (RNNs), Convolutional Neural Networks (CNNs), Multimodal Architectures (Visual Question Answering and Image Captioning), Reinforcement Learning with Human Feedback (RLHF), Few-Shot Learning
- **Software Engineering:** Python, Rust, Java, AWS, GitHub, Docker, Data Structures and Algorithms
- **Web Development:** JavaScript, HTML, CSS, ReactJs, RESTful APIs, D3.Js, Threejs

Honors & Awards

GEM Fellowship

2023

Virginia Tech & Argonne National Laboratory

- Selected as one of 11 scholars for the 2023 cohort of the GEM Fellowship within the College of Engineering at Virginia Polytechnic Institute and State University, sponsored by Argonne National Laboratory

New Horizons Graduate Scholar 2023
Virginia Tech

- Nominated for membership into the New Horizons Graduate Scholars program at Virginia Polytechnic Institute and State University

Undergraduate Research Conference Award 2022
The University of North Carolina at Charlotte

- Recipient of the Math and Computer Science Poster Presentation Award at UNC Charlotte's 2022 Undergraduate Research Conference

SPARC4 Scholarship 2019
Rowan-Cabarrus Community College

- Recipient of the STEM Persistence and Retention via Curricula, Centralization, and Cohorts (SPARC4) scholarship from Rowan-Cabarrus Community College

Professional Societies & Involvement

Society of Hispanic Professional Engineers (SHPE) 2023
Virginia Tech

- Student member of GradSHPE@VT

National Society of Leadership and Success 2019
Rowan-Cabarrus Community College

- Inducted member of the Sigma Alpha Pi chapter since 2019