Manuel A. Martinez Garcia

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EDUCATION

UNIVERSITY OF CALIFORNIA, BERKELEY

Bachelor of Science in Industrial Engineering & Operations Research **August 2022 – May 2026**

EXPERIENCE

CAL TRANSPORTATION ASCE TEAM

Operations Team Member & ITE Western District STEM Outreach Member **January 2023 – Present**

- 1st Place Winner: MidPac (2025) with acknowledgment for excellence in transportation analysis
- Served as Lead Presenter for the Operations team, communicating key findings in cost and network analysis to judges and peer institutions
- Performed geospatial and network analysis in Python, optimizing signal timing and assessing performance improvements from redesigned corridors, multimodal street layouts, and added bicycle infrastructure
- Co-developed a fictional town map to teach multimodal transportation concepts and collected/analyzed student travel-behavior data to understand how they navigate networked systems

CENTER FOR EDUCATIONAL PARTNERSHIPS

Data Management Fellow **August 2025 – Present**

- Supported the launch & adoption of UC Berkeley's Salesforce Education Cloud–based Data Management System (DMS), centralizing student records from 12 outreach programs into a unified platform
- Conducted data quality checks & audits to ensure accuracy, consistency, & compliance with FERPA & security standards
- Built & maintained Salesforce reports & dashboards tracking key college access milestones (e.g., college applications, financial aid records)

MONARCH RESEARCH PROGRAM

Program Coordinator **May 2025 – August 2025**

- Coordinated UC Berkeley's inaugural research program for undocumented students, managing semester-long planning for the summer launch
- Directed outreach and recruitment, building faculty partnerships and communicating with prospective student participants
- Contributed to drafting funding proposals and securing resources to launch and sustain the program
- Managed scheduling, facilitated meetings, and provided ongoing participant support for smooth operations from preparation to completion

RESEARCH

MONARCH RESEARCH SCHOLARS

Calyber: A Ridesharing Game | Department of Industrial Engineering & Operations Research **May 2024 – August 2025**

- Developed pricing and matching algorithms for shared-ride systems, implementing heuristic search, supervised learning models, and dynamic programming to maximize operator profit and network throughput
- Translated research outputs into instructional modules and taught incoming transfer students core concepts in machine learning, optimization, and algorithmic decision-making
- Runner-up, INFORMS Case Competition (2025), with the project's technical paper adapted into a case study evaluating algorithmic performance, scalability, and real-world operational relevance

Cooperative Congestion Management | CITRIS & the Banatao Institute **May 2025 – August 2025**

- Conducted market research and applied statistical/actuarial modeling to evaluate the scalability, adoption potential, and sector-specific benefits of congestion-reduction systems across freight, insurance, and transit agencies
- Produced ROI models quantifying fuel savings, emissions reductions, and insurance-premium impacts
- Assisted in drafting technical proposals and funding materials to support pilot deployments and stakeholder engagement

FIREBAUGH SCHOLARS PROGRAM

Learning-Augmented CVRP Solvers | Department of Industrial Engineering & Operations Research **August 2025 – Present**

- Investigating scalable dispatch heuristics and ML–optimization hybrids to improve routing efficiency in dynamic last-mile delivery systems
- Studying existing dispatching policies to analyze route-generation rules, node-assignment strategies, and CVRP solution structures
- Implementing algorithms in Python and translating core components into C++ to achieve major speed gains on large routing networks
- Iterating and benchmarking heuristics and learning-based methods on large, randomly selected instances to assess scalability and performance

PROJECTS

PREDICTIVE MODELING OF U.S. HOMELESSNESS RATES

Applied, tuned, and evaluated supervised learning models on extrapolated homelessness datasets to forecast county- and state-level homelessness rates, incorporating feature engineering and performance validation

STOCHASTIC MODELING OF AIRLINE CABIN BOARDING EFFICIENCY

Cabin boarding simulator built in Python that models real-world stochastic events, supports multiple cabin configurations, benchmarks boarding strategies, and allows users to design and test custom policies.

311 NEIGHBORHOOD EQUITY ANALYSIS

Analyzed a snapshot of San Francisco 311 service requests by census tract (cleaning, spatially joining, and integrating ACS socioeconomic data) to evaluate how reporting patterns vary with neighborhood income and equity measures.

SKILLS

MODELING & ANALYTICAL

- Optimization & Mathematical Modeling
- Stochastic & Dynamic Simulation
- Data Analysis, Forecasting & Statistical Modeling
- Game Theory, Decision Analytics & Operations Systems
- Technical & Academic Writing

PROGRAMMING & TOOLS

- Languages: Python, C++, R, MATLAB, SQL
- Optimization: Gurobi, Pyomo, OR-Tools
- Platforms: Git/GitHub, LaTeX, Linux, macOS, Windows
- Transportation: PTV Vissim, OSMnx, NetworkX

COMMUNICATION & LEADERSHIP

- Technical Presentation & Research Communication
- Team Leadership, Collaboration & Mentoring
- English–Spanish Interpretation
- Empathetic & Supportive Communication
- Version control expertise