Zhe Wee (Derrick) NG

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GitHub Portfolio: www.github.com/NGZheWee/ZheWee-NG-Portfolio/

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Education

University of California, Los Angeles

Master of Engineering in Artificial Intelligence *Sept 2025 - Expected Sept 2026*

University of California, Berkeley

Bachelor of Arts in Computer Science, GPA: 3.6 *Aug 2023 - May 2025*

University of California, San Diego

Transferred Credits towards Computer Science Degree, GPA: 3.6 *Sept 2020 - May 2023*

Research Experience & Publications

Lead Researcher – Machine Learning-Aided Supply Chain Analysis *Apr 2024 – Oct 2025*

- Led a quantitative study applying machine learning to model cost, logistics, and environmental interactions within circular waste-management supply chains.
- Built a MATLAB–Python framework integrating Feedforward Neural Networks, Random Forests, and Monte Carlo simulations to evaluate parameter sensitivity and optimize system efficiency.
- Achieved predictive accuracy of $R^2 \approx 0.97$ across 21 sustainability variables and identified key process levers driving performance and emissions outcomes.
- First and corresponding author; published in Sustainability (MDPI, Q2 SCI Journal), 17(19), 8848 (2025).

Research Assistant – Berkeley Engineering Design Scholars Program & Co-Design Lab

Jacobs Institute for Design Innovation & Department of ME, UC Berkeley *Jun 2024 – Aug 2025*

- Contributed to data-driven sustainable-design research combining user-centered design principles with natural-language-processing pipelines.
- Developed a database of 23000+ Amazon reviews for 290 sustainability-certified products using custom automated web-scraping and structured data workflows.
- Applied Python-based NLP techniques including BERT, VADER, LDA, NMF, and OpenAI API for sentiment analysis, topic modeling, and correlation analysis to extract design-relevant sustainability insights.
- Co-author of peer-reviewed paper presented at ASME IDETC-CIE 2025 (Anaheim, CA), published in conference proceedings (IDETC2025-169019).

Research Assistant – Squishy Robotics, Berkeley Expert Systems Technologies Lab

Department of ME, UC Berkeley *Jan 2025 – May 2025*

- Conducted EDA on the Corsican Fire Database to identify modality imbalance and annotation gaps, implementing computer-vision and Gemini-based pipelines for data augmentation and labeling to enhance RGB–IR coverage and descriptor completeness.
- Developed a descriptor-guided multimodal forecasting framework combining RGB, IR, and textual descriptors via EfficientNet, ViT, and BERT-based late-fusion with LSTM temporal modeling for wildfire spread and intensity prediction.
- Delivered an interpretable forecasting module integrated into Squishy Robotics' autonomous wildfire-response platform, generating visual–language outputs for real-time validation and deployment.

Awards

Multimodal Single-Cell Integration Kaggle Competition (Silver Award)

September 2022 - December 2022

- Collaborated in a team of 5 to develop predictive models analyzing DNA, RNA, and protein covariation in single cells.
- Used Python and R to implement XGBoost, Random Forest, and Neural Networks for model development.
- Secured 24th place among 2,000+ teams, earning a Silver Award for high model accuracy.

International Genetically Engineered Machine Competition (Silver Award)

July 2019 - September 2019

- Led a team of 5 to design a BioBrick part using CRISPR-Cas9 to target HPV and identify proteins linked to NFX1-123 overexpression.
- Applied laboratory techniques (PCR, plasmid construction, cell transfection, mass spectrometry) to develop and validate a prototype detecting biomarkers for early HPV-related cervical cancer diagnosis.
- Achieved top 20 globally among 100+ teams, earning a Silver Award for the innovative prototype.

Work Experience

Venture Capital Analyst (Internship)

JinDing Capital, Shanghai, China *May 2025 – Sept 2025*

- Authored industry research reports on GPUs, DPUs, spatial-computing, and edge-AI chip sectors, analyzing architecture roadmaps, ecosystem positioning, and TAM projections.
- Led due-diligence interviews with Tencent, Xiaomi, and China Mobile to evaluate adoption potential for 3D DRAM, HBM, and sparse-computing, and to compare DPU implementations (FPGA vs SoC vs ASIC).
- Verified technical roadmaps, product data, and benchmark claims; synthesized findings into investment memos and screening models supporting semiconductor-sector deals.

Web Development Engineer (Internship)

AoSheng Global Inc., El Monte, CA, U.S.A *Sept 2023 - Dec 2023*

- Created adaptive websites with HTML, CSS, and JavaScript, optimizing performance for cross-platform use.
- Designed intuitive UI/UX for the education consulting sector.
- Contributed to digital strategy by evaluating web stacks and proposing implementation improvements for maintainability.

Data Analyst (Internship)

Hironpal Holdings, Singapore *Mar 2022 - Aug 2022*

- Analyzed ERP datasets with SQL to automate inventory-turnover calculations and alerting workflows.
- Built Python forecasting models (Linear Regression, KNN) to predict sales and demand patterns that informed purchasing and stocking decisions.
- controlled A/B tests via Google Optimize to measure campaign lift, partnering with marketing to adjust product selection and advertising based on measurable impact.

Test Engineer (Internship)

Serica Semiconductor Technology, Beijing, China *Nov 2021 - Jan 2022*

- Simulated PPL circuits with ModelSim to verify stability.
- Developed C test scripts with OpenSSL to validate RSA encryption/decryption.
- Used ANSYS Icepak to optimize PCB heat dissipation by identifying hot spots and refining thermal pad placement.
- Measured and ensured PCIe signal integrity using oscilloscopes, resolving distortions and crosstalk through improved trace routing.

Skills

- **Programming Languages:** Python, Java, C, R, MATLAB, JavaScript, HTML, CSS, LaTex
- **Artificial Intelligence:** Multimodal Predictive Modeling, Machine Learning (XGBoost, Random Forest), Deep Learning (Diffusion Models, LSTM, Neural Networks),
- **Data Analysis:** SQL, Data Visualization, Exploratory Data Analysis (EDA), Regression (Linear, KNN), Monte Carlo Simulation
- **Natural Language Processing:** Topic Modeling (LDA, NMF), Sentiment Analysis(BERT, VADAR), OpenAI API
- **Web Technologies:** Web Scraping (DrissionPage, BeautifulSoup), Adaptive Web Systems, UI/UX Design
- **Professional Skills:** Interdisciplinary Collaboration, Market Research, Technical Due Diligence, Quantitative Analysis, Project Coordination
- **Languages:** English, Mandarin