Zhe Wee (Derrick) NG

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Education

University of California, Berkeley

BA in Computer Science, GPA: 3.6 *August 2023 - Expected May 2025*

University of California, San Diego

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

Research Experience

Research Assistant – Diffusive AI Lab

Tsinghua University, Beijing, China *October 2024 - Present*

- Collaborating with Dr. Zheng Zhu on a scalable 3D video generation system using diffusion models.
- Implementing environmental encoding, action-based updates, and attention-enhanced VAEs with LSTM to enable persistent state tracking and ensure consistent object placement and temporal coherence.
- Developing a text-prompted scene modification framework with LLM-driven command parsing, cross-attention transformers, and dynamic text-based scene rendering for real-time updates.

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

Jacobs Institute for Design Innovation & Department of ME, UC Berkeley *June 2024 - Present*

- Conducting NLP-based research on sustainable design with Dr. Kosa Goucher-Lambert.
- Developed automated web scraping tools to extract Amazon product and review data.
- Applied Python-based NLP techniques (BERT, VADER, OpenAI API) for sentiment analysis, topic modeling (LDA, NMF), and correlation analysis, uncovering insights to guide sustainable design strategies.

Independent Research – Predictive Maintenance Modelling *April 2024 - Present*

- Researching predictive maintenance to improve industrial equipment reliability using time-series data.
- Developed LSTM neural networks, achieving superior predictive accuracy and reduced downtime through MSE and precision-recall evaluations.
- Authored a manuscript, *"Enhanced Equipment Reliability Through Predictive Maintenance Modeling: A Machine Learning Approach,"* currently under peer review.

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

Web Development Engineer (Internship)

AoSheng Global Inc., El Monte, CA, U.S.A *September 2023 - December 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 stratefy through insights on web technologies.

Data Analyst (Internship)

Hironpal Holdings, Singapore *March 2022 - August 2022*

- Used SQL to analyze ERP data, automating inventory turnover and alerts.
- Built Python forecasting models (linear regression, KNN) for sales predictions.
- Conducted A/B testing via Google Optimize to improve marketing campaign effectiveness.
- Partnered with marketing to optimize product selection and advertising.

Test Engineer (Internship)

Serica Semiconductor Technology, Beijing, China *November 2021 - January 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.

Venture Capital Analyst (Internship)

JinDing Capital, Shanghai, China *May 2020 - December 2020*

- Identified investment opportunities in semiconductors, DPUs, CPUs, and SaaS.
- Assessed tech firms using qualitative and quantitative methods for strategic investments.
- Evaluated products, delivering reports on technical specs and development stages.

Skills

- **Programming Languages:** Python, Java, C, R, MATLAB, JavaScript, HTML, CSS, LaTex
- **Artificial Intelligence:** Machine learning, diffusion-based models, VAE, LSTM
- **Natural Language Processing:** Sentiment analysis, topic modeling, OpenAI API
- **Data Analysis:** SQL, predictive modeling (Regression, KNN, XGBoost, Random Forest)
- **Web Technologies:** Web scraping, UI/UX, adaptive development
- **Database Systems:** Design, integrity control, full-stack systems
- **Hardware:** Digital logic, ModelSim, thermal and signal analysis, OpenSSL
- **Cryptography:** encryption/decryption, secure protocols
- **Languages:** English, Mandarin