# Chung-Wei (Denis) Wu

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## SKILLS

**Programming Language**: C, C++, Python, Java, MATLAB, TCL, SQL
**IDE and tools**: Visual Studio, OpenCV, Git, Linux, Docker, Microsoft Azure, Pytorch, MySQL, Django, CMake, vcpkg, LLVM, GLSL
**Others**: CI/CD, unit testing, data scraping, Embedded system

## EDUCATION

**University of Washington (UW)**, Seattle, WA — Sept. 2023 – Mar. 2025 (Expected)
- *M.S. in Electrical Engineering* — Overall GPA: 3.85
- Course: Database Systems, Applied Parallel Programming on GPU

**National Tsing Hua University (NTHU)**, Hsinchu, Taiwan — Sept. 2019 – July 2021
- *M.S. in Electrical Engineering* — Overall GPA: 3.57
- Course: Advanced Computer Architecture, Deep Learning, Data Structure, Computational Photography

**National Chiao Tung University (NCTU)**, Hsinchu, Taiwan — Sept. 2013 – June 2017
- *B.S. in Electrical and Computer Engineering* — Last 60 GPA: 3.62
- Course: Computer Architecture, Computer Vision, Computer Networks, Operating Systems

## PROFESSIONAL EXPERIENCE

**Visual Concepts** (A subsidiary of 2K Games, the developer behind the NBA 2K and WWE 2K) — June 2024 – Sept. 2024 (Expected)
*Software Engineer Intern*
- Developed OpenGL / C++ / GLSL framework with CMake and vcpkg to analyze GPU/CPU and memory performance for rendering parameterized human body models in NBA2K on PS5
- Implemented various compression algorithms for unit vectors in C++ inside shader code and reducing memory with Sony API and AMD GPU Instruction Set, reducing GPU memory bandwidth by 30% while maintaining frame rates
- Researching and developing efficient bounding volume hierarchy (BVH) construction algorithms in Python and C++ for optimizing ray tracing on PS5

**Novatek Microelectronics Corp.** (Design display ASIC for Samsung, Sony, … etc.) — Sept. 2021 – June 2023
*Software Engineer*
- Developed and optimized the embedded Linux kernel space driver in C for the control of the picture engine's display pipeline inside the ARM-based TV system-on-chip (SoC), including the display signal timing and display features like image sizing
- Implemented APIs based on client's request to link different layers between the user and the kernel side and customized the driver for advanced display features for the 2022/2023 Android-based smart TV products
- Support clients and FAE teams in debugging issues with anomalous display and erroneous signal timing from software view
- Developed and maintained a CI/CD pipeline by authoring TCL unit test scripts to automate the validation of kernel driver codebases within the Git repository, ensuring the integrity of IC functionalities and display features

## SELECTED PROJECTS

**Leveraging AI to Identify the KOL,** UW Capstone project with Genmab — Jan. 2024
- GitHub link: https://github.com/ChungWeiWu923/UW_Capstone
- Developed a front-end application with web-based UI and algorithm in Python based on machine learning (ML) to identify key opinion leaders (KOLs) in the pharmaceutical industry
- Implemented a Python-based web scraping script for machine learning algorithm's inputs, including dataset retrieval from online databases such as PubMed and ClinicalTrials.gov, feature extraction, and dataset preprocessing using NetworkX
- Constructed a Graph Neural Network (GNN) with PyTorch to calculate centrality scores for individuals, facilitating the identification of KOLs through score-based ranking
- Developed the back-end system in python with Django REST framework and MySQL database to provide RESTful API for the front-end application
- Packaged source code into Docker containers for streamlined and efficient deployment

**Appointment Reservation System**, Database Systems course, UW — Nov 2023
- Develop a Java and SQL-based vaccination appointment booking system for patients and caregivers
- Using Microsoft Azure as online database to store user and appointment data
- Increasing security of user by applying cryptography technique with PBKDF2 algorithm on personal data

**Clothes Style Transformer**, Computational Photography Course, NTHU — June 2020
- Developed image processing flow in Python to simulate a virtual dressing room with only conventional algorithms using Spyder and Jupyter Lab
- Implemented image segmentation to identify the border of cloth by applying Flood Fill algorithm and morphological processing with OpenCV
- Utilized normal mapping to maintain the light, shadow, and wrinkles of clothes appearing in original images
- Won the third place among 10 groups