Kai-Ching Chang

Game Engine Developer

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Key Achievement With over four years of specialized experience in game engine development, computer graphics, and AI/machine learning applications within the entertainment industry, I have played a pivotal role in driving project success and technological innovation. My contributions to notable projects like 'Park Beyond'—where I led the development of a fully revised rendering system that improved response time efficiency by 80%—exemplify my ability to enhance product performance and user experience. Fluent in C++, C#, and Python, I offer deep expertise in optimizing game engines and realizing advanced graphics algorithms for high performance rendering. I'm committed to leveraging agile methodologies and my proficiency in Unreal Engine and Unity to deliver on tight deadlines, coordinate with cross-functional teams effectively, and transform cutting-edge technologies into impactful gaming solutions.

Professional Skills

- In-Depth knowledge in computer graphics algorithms, such as Octree, Ray tracing, Illumination Models
- Proven software development skills in C++/Python/C# and programming structural, reusable and easy-maintained codes
- Analyze performance by using profiling tool, such as Valgrind and Unreal insight
- Strive to improve and optimize code with game programming pattern
- Strong ability to collaborate with interdisciplinary teams

Experience

General Programmer, Limbic Entertainment, Langen Germany **06/2023 - 03/2024**

- Coordinated with QA team and profiled console issues such as optimized memory usage by using memory pool to approach game stability.
- Mentored junior and conducted code review to contribute to team growth, and project quality.

Junior Programmer, Limbic Entertainment, Langen Germany **04/2021 - 05/2023**

- Shipped Park Beyond into cross-platforms with Unreal C++. I specialized in optimizing rendering performance and enhancing gameplay features through technical innovation and collaborative development.
- Designed and implemented data-driven systems to optimize performance updates, resulting in a game engine that supports over 2000 animating agents simultaneously, significantly enhancing gameplay smoothness and visual quality for players.
- Refactored and profiled rendering system to improve 80% response time through the integration of parallel computing and using bit packing to address memory limitations, successfully delivering customization functionalities.
- Integrated Downloadable Content plugin and designed Activity events into game modules to pass console certificates for product delivery and coordinated with the cross-project team to maintain shared plugins for long-term development benefits.

Technician Programmer, TH Koeln, Koeln **09/2020 - 03/2021**

- Led the development and debugging of gameplay mechanisms and UI/UX for the SOLVE research app with Unity C#, collaborating closely with a cross-disciplinary team to enhance user engagement and study outcomes.
- Developed and fine-tuned gameplay mechanisms, including player controllers and feedback systems, enhancing user engagement within the initial six months after launch.

Research Assistant, Bremen Logistic and Production Institution Gaming Lab(BIBA), Bremen **11/2019 - 06/2020**

- Utilized Unity and C# to design a virtual warehouse environment, enhancing learning outcomes for logistics trainees.
- Engineered IoT data integration into a virtual environment, elevating realism in logistics process simulations.

IT Assistant – The Institute for Integrated Product Development (BIK), University Bremen, Bremen **08/2018 - 04/2019**

- Supported AI research projects aimed at enhancing production efficiency and automation through advanced neural network applications.
- Researched object localization and image classification by developing neural network models under GCP with Kera and TensorFlow that reduced energy consumption in production processes, benefiting operational sustainability.
- Deployed deep learning models to Android devices in Java, enabling real-time object recognition that improved production line defect detection.

Education

Bremen University, Bremen **10/2017 - 04/2020**

- M. SC. in Digital Media focusing on computer graphics
- Master thesis: *Ray-Marching-Based Volume Rendering in a Game Engine*

- Constructed Computer Tomography(CT) data with Unreal4 for efficient real-time viewing in Virtual Reality operation room
- Programmed Ray-Marching using an acceleration data structure (Octree) for real-time rendering in HLSL and optimized visual quality with graphics algorithms such as local ambient occlusion, Stochastic Jitter, SSAA to prevent artefact and enhance user immersion

· Research project: Virtual Reality Coral Reef
  - Developed a gameplay system for the ecology of coral reef with virtual reality by using C++ in Unreal, uploaded and shared the codes to the repository by Git to review and revise different versions, and maintained the project
  - Design Website independently in Javascript and HTML: https://cgvr.cs.uni-bremen.de/teaching/studentprojects/VReef/

· Research thesis: *Understanding the Prevalent Issues of Airline Passengers Based on Customer Reviews*
  - Programmed Natural Language Processing (NLP) techniques analyze text in Python and push notifications of recommendations to Passengers

National Chung-Cheng University, Taiwan **09/2011 - 06/2014**

· B. SC. in Computer Science and Informatics Engineering

· Bachelor project: *Glasses-Free 3D Interactive Projection System*, won the Prize Third Equal of International ICT Innovation Service Contest in Taiwan (Ref. Cert. No. 102CSIM)
  - Rendered grasses-free 3D models in OpenGL and interacting with users under gesture detection.
  - Developed a Graphic User Interface (GUI) and animated model with C++, ran data processing using Open Natural Interaction (OpenNI) in Kinect and tracked the user's body motion

Publication

· *Volumetric Medical Data Visualization for Collaborative VR Environments* in EuroVR 2020 (pp 178-191) https://link.springer.com/chapter/10.1007/978-3-030-62655-6_11

Languages Skills

English (C1), German (B1), Mandarin (C2)

Others

· Personal Website: *https://ckc99u.github.io/*

· LinkedIn: *https://www.linkedin.com/in/kai-ching-c-730513164/*

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