Zeta Chua

Digital Twin Software Engineer, Dyson
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EXECUTIVE SUMMARY:

Passionate Frontend Software Engineer with experience leading cross-functional teams in innovative projects. During my final year at NTU, I led the development of an AR/VR recruitment platform, nearly securing a S$500K investment. At Dyson, I contributed to building a Digital Twin system using cutting-edge technologies like Nvidia Omniverse and MagicLeap. I continue to refine my front-end development skills by building personal website tools for creators, merging my passion for technology and user experience.

PROFESSIONAL EXPERIENCE:

Digital Twin Frontend Software Engineer, Dyson | July 2023 – Oct 2024

- **Scalable Image Catalog**: Engineered an image catalog system integrated with GCS Buckets and metadata embedding, optimizing search and retrieval functionalities. This reduced cognitive load for process engineers by 40%, streamlining image comparison workflows.
- **Real-Time Monitoring & Anomaly Detection**: Developed monitoring dashboards using **Grafana** with algorithms (change point detection, Bollinger Bands) to detect anomalies and instability in real time, decreasing equipment downtime by 25%.
- **Cross-functional Leadership & Data Tool Ownership**: Used fishbone diagrams and gap analysis to spearhead collaboration between data scientists, process engineers, and software developers to solve bottlenecks in sprint meetings (reduced 30mins of sprint duration), driving the development of automation tools.
- **Data Pipeline Development:** Led the development of data pipelines automating time-series data analysis for battery cell production using **GCP** services such as **BigQuery, and PostgreSQL**, reducing data retrieval times by 50% and empowering engineers to access real-time insights, enhancing decision-making.
- **Digital Twin & Dashboard Integration**: Designed a Digital Twin prototype using Unity WebGL and React.js, offering predictive analytics and interactive dashboards to stakeholders for enhanced risk analysis in factory operations.
- **Augmented Reality in Manufacturing**: Collaborated with **Nvidia Omniverse** to implement real-time AR-based factory simulations with **Magic Leap**, enhancing machine transport planning and cutting down operational planning times by 30%.

Technologies: React.js, GCS Bucket, BigQuery, PostgreSQL, Grafana, Nvidia Omniverse, Dash, Streamlit, Miro, Unity, Python, Magic Leap SDK

Metaverse Startup Project Lead, FYP | Aug 2022 – Apr 2023

- **Product Vision and Leadership for Computer Vision Recruitment Platform**: Led a 10+ member team to build an Motion capture-enhanced virtual recruitment platform, integrating machine learning models from Tensorflow.js for motion capture and AI-based avatar personalization in **React.js** and **Unity WebGL**.
- **Cross-functional Stakeholder Collaboration**: Presented outcomes and aligned the product with feedback from key stakeholders in NTU, securing partnerships with SUTD and MOE to deploy the

platform across educational institutions, under the NTUitive Entrepreneurship Program and my Final Year Project in Computer Science.

- **Motion Capture AI Pipeline**: Developed a **TensorFlow.js** pipeline to map motion capture data to virtual avatars, improving recruitment simulation experiences for users by 30%.linkedin post

Technologies: Unity, TensorFlow.js, React.js, Animxyz.js, GitHub

XR Creative Developer Intern, Hiverlab | Jan 2022 – Aug 2022

- **AR/VR/MR App Development:** Developed immersive applications for Augmented Reality (AR), Virtual Reality (VR), and Mixed Reality (MR) platforms, integrating 2D/3D assets and implementing UI, animations, lighting, and shaders based on design specifications.
- **Cross-Functional Collaboration:** Partnered with developers and creative teams to deliver
    - high-quality projects that met complex requirements, ensuring seamless integration of creative and technical elements.
- **Code Optimization & Scalability**: Implemented reusable and scalable code for real-time AR/VR applications, reducing load times by 25% and improving cross-platform performance.
- **UI/UX Design:** Applied design thinking methodologies to conceptualize and design user experiences and interfaces, adhering to Human-Computer Interaction (HCI) principles tailored for AR/VR/MR devices.
- **Collaborative Product Development**: Worked with cross-functional teams to ensure the seamless integration of technical and creative elements, contributing to high-quality project outcomes.

Technologies: User Research, User Interface Design, Git, GitHub, Figma, Front-End Development

XR Research Attachment Part Time, ASTAR | Aug 2021 – Nov 2021

- **AI for Object Detection**: Developed an object detection demo using **Unity ML Agents** with **OpenCV**, showcasing real-time image classification capabilities in a research-focused VR environment.

Technologies Unity C#, VR developments, Object detection, Image Classification

UX & Front-End Developer Intern, serl.io **| May 2021- Aug 2021**

- **UI/UX Prototyping for HoloLens:** Led UX research, interviews and created prototypes that improved client usability by 62.5%, contributing to successful MRX Console deployment. Authored and published a UX case study on mixed reality applications
- **Client Onboarding & Training**: Conducted client training sessions, streamlining software deployment and increasing customer satisfaction through improved onboarding processes.
- **Enhanced User Experience of MRx application**: Used Angular.js front-end components for MRX Console prototypes, provided a summary dashboard page to guide users easily and renamed process steps to improve application usability.

Technologies: Angular.js, Angular Material, Microsoft HoloLens, UX Design, Video Production

Link: UX Case Study Article by Zeta Chua

XR Research Assistant Tree modelling, NTU | Feb 2021 – May 2021

- Collaborated Augmented Reality project with NLB to create tree models for FYP student such as Lee Kuan Yew's tree "African Mahogany"
- Mentored by Professor Cai Yu

Technologies: Blender (Sapling tree generator), Unity,
Link: Github Repository for Blender Trees

Web Design and Development Intern | June 2020 - Aug 2020

- Created HIFI prototypes on Figma,
- Key clients: Breadtalk Group, Neo Group Limited

Technologies: WordPress (Divi Theme) • HTML/CSS

PERSONAL PASSION PROJECTS:

- Social Media Platform, Reactjs and UIUX (in the process) Vora Website
- Auction Website, React.js and UIUX Zion Auction Website
- Developer of Lofi Typing Game, Unity Webgl Lofi Typing Unity Game by Zeta Chua
- Frontend Engineer for Java Dengue Clinic App, Android Studios Dengue Tracking Github Repository
- VR Oculus Visual Impairment Unity Development Virtual Reality Oculus Quest 2 Application
- Heritage Game Jam, Unity Development Game Jam Hackathon Game

KEY SKILLS:

- Software Tools: Unity, Android Studios, Jupyter Notebook, Google Colab, VSC, Eclipse, Anaconda, Firebase, Nvidia Omniverse, Bitbucket
- Data Engineer Tools: Grafana, Postgres, Bigquery, Python
- UIUX Tools: Figma, Miro, Invision, Adobe Illustrator, Blender
- Frontend Development: Three.js, React.js, HTML, CSS, Wordpress, JavaScript, Java, C, C#
- Computer Vision: PyTorch, Tensorflow, Image Classification, Image Recognition

EDUCATION AND PROFESSIONAL QUALIFICATIONS / CERTIFICATIONS

Google Professional Data Engineer Certification, Coursera 2024 Sep

SCRUM Master Certification, Udemy 2024 Sep

Nanyang Technological University Computer Science 2019-2023

St. Andrews Junior College 2017-2018

ABOUT ME

I am driven by a deep passion for tackling challenges and constantly pushing myself to grow. After earning my degree in Computer Science from NTU, I spent a year at Dyson where I had to quickly adapt to new technologies like PostgreSQL, BigQuery, and Grafana. My focus has been on creating solutions and optimizing processes for engineers to enhance Dyson's Cell Production performance.

Beyond my technical expertise, I am a natural leader and collaborator, rallying those around me to join in passion projects like "Vora" and my NTU Final Year Project. My dedication to problem-solving was recognized by my professors, who proposed publishing our innovative Motion Capture pipeline for WebGL and TensorFlow.js.

I am deeply committed to creating impactful and user-centered solutions. Whether developing applications, websites, or even games, I strive to blend functionality with aesthetic appeal. My enthusiasm for UI/UX design stems from a desire to understand and address user pain points, crafting solutions that truly make a difference