

Brandon Falk

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Info

Seasoned developer and researcher with a 5-year background in Unity development, complemented by two years in AI and a year in server programming. Holding master's degrees in Network Security and Design, I am skilled in Python, C#, and C++, with a focus on integrating ML algorithms and enhancing server-side API efficiency. My career spans immersive application development, backend system optimization, and pioneering AI-driven solutions. I bring unique insights into user engagement and a passion for merging advanced technology with gaming experiences. My goal is to utilize my diverse expertise to contribute to innovative technologies.

Education

B.A. Liberal Arts – University of Michigan Sep 2014 → April 2019

- Areas: Computer Science, Philosophy, Sociology

M.S. Computer Science – Shanghai Jiao Tong University Sep 2019 → Dec 2021

- Thesis: Virtual Reality Correlating Movement Signatures with Avatars

M.S. Design – Ulsan National Institute of Science & Technology Feb 2022 → Dec 2023

- Thesis: Phenotyping Stress in Virtual Reality for Healthcare

Work Experience

Unity Developer – FluentT Sep 2023 → Feb 2024

Unity **Unreal Engine** **C#** **Python** **MediaPipe** **API** **machine-learning** **remote**

- Developed hand pose recognition models using MediaPipe and Unity for 3D avatars, enhancing user interaction in collaboration with LINE.
- Applied machine learning and deep learning techniques in Unity for real-time avatar control, achieving seamless integration and enhanced responsiveness.
- AR Prototyping development with idol stage and performance placement, photo and video capture, and individual avatar customization
- Engineered machine learning inference for voice synthesis tutoring application for web platform, utilizing MediaPipe in Unity to enable advanced voice interaction features.
- Social PC App in Unity WebGL and Fishnet Network leveraging in-house facial and body identifying technology with 3D avatars

Virtual Reality Researcher – Hanyang University Mar 2022 → May 2023

Unity **Unreal Engine** **C#** **Python** **OpenAI** **Whisper** **API** **machine-learning** **remote**

- Collaborated with UNIST in pioneering VR research focused on analyzing its effects on human health and psychology
- Led stress phenotyping studies using Vive, Meta Quest II, and Meta Pro Headset Devices, uncovering significant correlations between VR environments and psychological responses.

- Designed and innovated task-based VR environments adhering to established research standards, successfully simulating various real-world scenarios for comprehensive analysis.

Graduate Virtual Reality Researcher – Shanghai Jiao Tong

Aug 2019 → Dec 2021

Unity C# Python machine-learning remote

- Conducted comprehensive research in VR with a focus on cybersecurity aspects, utilizing Unity, C#, and Python. Demonstrated that pose data captured from avatars and online videos of the user can uniquely correlate with user identities, providing insights into identity verification methods.
- Presented research findings at ACM 2021, contributing to the broader understanding of VR and its potential applications.

Publications

Phenotyping Stress in Virtual Reality Environment

- HCI KOREA 2024 <https://www.dbpia.co.kr/Journal/articleDetail?nodeId=NODE11714615>

ReAvatar: Virtual Reality Identify Users Through Correlating Movement Signatures

- ACM 2021 <https://doi.org/10.1145/3460120.3485345>

Voiceprint Mimicry Attack Towards Speaker Verification System in Smart Home

- IEEE INFOCOM 2020 <https://doi.org/10.1109/INFOCOM41043.2020.9155483>

Personal Projects

Virtual Reality Stress Phenotyping

2023 C# Unity virtual-reality

<https://github.com/desuqcafe/UNIST-VR-Stress-Researchv2>

- Integrating psychological standard research methods in order to phenotype stress in Virtual Reality scenarios. Such as adapting the Trier Social Stress Test for VR.

Virtual Reality Breathing Meditation

2022 C# Unity virtual-reality Shader Blender VFX

<https://github.com/desuqcafe/VR-Breathing-Simulation-AI>

- Using Unity, C#, and VR, I create an immersive virtual reality environment for Box Breathing meditation technique used in Tandem with Sonar Wave identification which was also featured at a conference at the 2022 Korea Science Technology Festival.

Semantic Analysis Tweet Curator

2023 javascript flask python

<https://github.com/desuqcafe/Cute-SemanticAnalysis-Tweet-Curator>

- Practice with various machine learning models and training for semantic analysis to be applied to tweet creation and user search tweet evaluation.

Lumina Discord Bot

2023 `Discord` `python` `OpenAI api` `private`

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- Discord bot that searches anime images to post at users request, users can interact with the bot emulating ChatGPT functionality

3D Modeling Hobby

https://www.instagram.com/yunseul_dimension

- Blender, ZBrush, Adobe Substance Painter, Photoshop, Premiere Pro

Language Proficiency

English - Native (US)

Korean - Limited Proficiency (KIIP 3)

Chinese - Limited Proficiency (HSK 3) Japanese - Beginner