Hanbie Ryu

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About

- Born in Sheffield, England, and currently majoring in Artificial Intelligence at Yonsei University
- Passionate about game development, drawing, and playing the piano
- Experienced in both design and engineering, with deep theoretical understanding of AI and computer science

Education

Yonsei University, Dept. of Artificial Intelligence (Undergraduate) March 2023 –

- Cumulative GPA: **4.06/4.3**
- TOEIC: **965/990**
- **Coursework:** Computer Programming, Object-Oriented Programming, Data Structures, Discrete Mathematics, Linear Algebra, Probability and Statistics (+ CS231n, Stanford University open course)

Honors and Awards

- 1st semester, 2023 – Honors
- 1st semester, 2024 – Honors

Projects and Experiences

Game Development, Yonsei Computer Club April 2023 – March 2024
[github.com/HBRYU/Tower_B-40]

- Solo-developed an indie game in Unity (C#), using FL-Studio (SFX) and Aseprite (graphics)
- Designed optimized pathfinding systems across long distances by combining graph/ grid-based A* algorithms
- Designed advanced programmatic AI for game entities with state machines, including physics-based navigation and procedural animation
- Created all graphical and audio assets with third-party software

Machine Learning Engineer Intern, Medisys Lab – Yonsei University January 2024 –

- Experimented with methods for denoising medical CT images of different noise levels
- Designed a codebase to use different model architectures (REDCNN, U-net, etc) in training, with systems for keeping track of each experiment (logging, analyzing, organizing models, etc)
- Implemented a WGAN-GP system to prevent over-smoothing of generated CT images, with a custom CNN architecture as the discriminator
- Currently experimenting with applying VGG loss (perceptual loss) alongside other losses to focus on key image features

Developing Machine Learning Agents in Unity, personal project (ongoing) June 2024 –
[github.com/HBRYU/Tower_B-40]

- Experimenting with various machine learning methods for agents in virtual environments
- Developed a graph-based neural network system for NeuroEvolution of Augmented Topologies (NEAT), along with a live visualizer to enable real-time analysis of each network

Teaching and Talks

Unity Game Development Seminar/Course, Yonsei Computer Club October 2023, March 2024

- Opened a seminar (October 2023) and course (March 2024) for club members on basic game development in Unity

Talk at 2023 SKYST Conference, Seoul Campus, KAIST August 2023

- Gave a 20-minute talk on game development and applying AI agents in virtual environments at the 2nd annual

SKYST (SNU, Korea Univ., Yonsei Univ., KAIST) conference

Technologies

Languages: C, C++, C#, Python, JavaScript

Tools: Unity, PyTorch, TensorFlow, Arduino, Raspberry Pi

Other: *Photoshop, Blender, FL Studio, Audacity, Premiere Pro* for graphic and audio design as well as video production

Research Interests

Machine Learning: Highly interested in deep reinforcement learning, especially applying advanced AI agents to virtual and physical environments