

Jente Vandersanden

jente.vandersanden@student.uhasselt.be

github.com/jentuuh

jentevandersanden.com

Research interests: Interactive global illumination, physically based rendering, inverse rendering, neural and differentiable rendering, design of rendering systems, distributed rendering systems

Education

Hasselt University

Expected: June 2023

MSc. in Computer Science (Major GPA: 17.5/20)

Diepenbeek, Belgium

- **Relevant courses:** Advanced Image Processing, Photorealistic Image Synthesis (Advanced Computer Graphics), 3D Modelling and Image Based Rendering, Computer Animation and Simulation, Artificial Intelligence, Big Data Analytics, Machine Learning, Compilers, Parallel and Distributed Systems, Advanced topics in Network Security, Computational Complexity

Hasselt University

September 2018 - June 2021

BSc. in Computer Science (GPA: 14.2/20)

Diepenbeek, Belgium

- **Relevant courses:** Algorithms and Data Structures, Software Engineering, Introduction to Computer Graphics, Operating Systems, Computer Networks, Functional and Logical Programming, Calculus, Linear Algebra, Statistics

Research Experience

Memory Coherent Ray Tracing (MSc. Thesis, in progress)

September 2022 - June 2023

In progress of developing and implementing a global illumination rendering algorithm that exploits ray coherency to maximize the usage of the GPU's fast cache memory. Our algorithm subdivides the scene into a grid of *radiance cells*, radiance is transferred via a memory coherent communication scheme between these cells. Radiance cells only operate on their local assets, which allows the GPU to work on coherent regions of memory compared to when incoherent rays are scattered all over the scene.

Research Internship at Hasselt University Visual Computing Lab

September 2022 - June 2023

Collaborated with Prof. dr. Philippe Bekaert's research group for 1-2 days per week. The main objectives of this research internship are to prepare a PhD proposal and to get hands-on experience with the state-of-the-art in inverse rendering, neural and differentiable rendering and neural scene representations. In addition, we are developing some new ideas in the field and we are aiming to publish our findings as a conclusion of the internship.

Expertise Center for Digital Media (Hasselt University)

August 2022 - September 2022

Visual Computing Research Intern

- Engineered and developed a semi-automatic NeRF-based synthetic data generation pipeline to train object detection models. Got hands-on experience with **camera calibration**, **triangulation**, **point cloud registration** and more.
- Assisted Hasselt University's Visual Computing research group led by Prof. dr. Philippe Bekaert in their sim2real research on the topic of synthetic datasets for object detection on reflective objects. Compared the quality of synthetic data generated by an image-based technique vs. traditional ray-tracing.

Shared Rendering Computation for Cloud Gaming (BSc. Thesis) - [demo video](#)

February 2021 - June 2021

Constructed a shared rendering system in which a back-end Vulkan (C++) server 'bakes' the diffuse global illumination of a scene into a texture using a Virtual Light Field approach. The results are streamed in real-time to a web-based front-end. The system is designed to save redundant computational resources and render dynamic diffuse global illumination for scenes on low-end clients. The final work was awarded with a **score of 19/20**.

Work Experience

Halff

July - September 2020 + 2021

Full Stack Developer Intern

Leuven, Belgium

- Designed, constructed and deployed a business automation platform from start to finish to facilitate contractor scheduling and accounting operations for a company in the Belgian HVAC industry, helping them scale to a revenue of 3 million euros within 1 year.
- Managed a team of 4 developers following the SCRUM methodology.

Awards and Achievements

Honor mention BSc. - Outstanding performance in BSc. final thesis (score: 19/20)

June 2021

Flemish Programming Contest - 4th place

March 2021

Technical Expertise

Proficient in: C++, Python, C, Vulkan, OptiX, CUDA, OpenCV, ReactJS, Node.js, Tailwind CSS, tensorflow, pyspark, MATLAB

Natural Languages: Dutch (native), English (proficient), French (professional), German (fair)