Last update: 15-01-2025

Jente Vandersanden

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Research interests: Generative modeling, physically-based light transport, generative diffusion models, differentiable rendering, neural rendering, inverse problems

Education

Max-Planck Institute for Informatics **October 2023 - Present**
PhD candidate in Computer Graphics *Saarbrücken, Germany*
*(Advisors: **Dr. Gurprit Singh** and **Prof. Dr. Hans-Peter Seidel**)*

Hasselt University **September 2021 - June 2023**
MSc. in Computer Science (GPA: 17/20, Summa Cum Laude) *Diepenbeek, Belgium*

- **Thesis: *A Scalable and Coherent Approach to Monte-Carlo Path Tracing* (grade: 19/20)**
- **Relevant courses:** Advanced Image Processing, 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, Cum Laude) *Diepenbeek, Belgium*

- **Thesis: *Shared Rendering Computation for Cloud Gaming* (grade: 19/20)**
- **Relevant courses:** Algorithms and Data Structures, Software Engineering, Introduction to Computer Graphics, Operating Systems, Computer Networks, Functional and Logical Programming, Calculus, Linear Algebra, Statistics

Publications

Score-based generative modeling through anisotropic SPDEs **ICML 2025 (under review)**
*Sascha Holl, **Jente Vandersanden,** Gurprit Singh, Hans-peter Seidel*

Edge-preserving noise for diffusion models **ICLR 2025 (under review)**
***Jente Vandersanden**, Sascha Holl, Xingchang Huang, Gurprit Singh*

Research Experience

Realistic Graphics Lab (EPFL) **July 2023 - September 2023**
Research Intern *Lausanne, Switzerland*

- Main contribution: Implementation of **differentiable rendering for heightfield primitives** for the ***Mitsuba 3*** renderer, under supervision of **Prof. Wenzel Jakob**. Experimented with the state of the art in physically-based differentiable rendering (algorithms for differentiation at visibility discontinuities, efficient algorithms for automatic differentiation of light transport, …)

Expertise Center for Digital Media (Hasselt University) **August 2022 - September 2022**
Visual Computing Research Intern *Diepenbeek, Belgium*

- 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. Philippe Bekaert** in their research on the topic of synthetic datasets for object detection on highly-specular objects. Compared the quality of synthetic data generated by our image-based pipeline vs. traditional ray-tracing.

Industry Experience

Halff **July - September 2020 + 2021**
Full Stack Developer *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 2 million euros within 1 year.
- Collaborated in a team of 4 developers following the SCRUM methodology.

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Selected Awards and Grants

Master's Award, Hasselt University **-** *#1 ranking student graduating from the Master's programme* **September 2023**
Doctoral Fellowship, Hasselt University **-** *PhD funding for a period of 4 years* **June 2023**
Honor mention BSc., Hasselt University **-** *Outstanding performance in BSc. thesis* **June 2021**
Flemish Programming Contest - *4th place* **March 2021**

Technical Skills and Natural Languages

Proficient in: C++, Python, C, Pytorch, Vulkan, OptiX, CUDA, OpenCV, ReactJS, Node.js, pyspark, MATLAB
Natural Languages: Dutch (native), English (proficient), French (professional), German (fair), Japanese (beginner)