Jan Zuiderveld

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I am a researcher, artist and technologist with an academic background counting degrees in Physics, Electrical Engineering, Neuropsychology, Artificial Intelligence and ArtScience. My professional history includes leading a machine learning team specializing in speech-to-intent systems and extended hands-on experience as both a researcher and an engineer in the field of generative AI.

EXPERIENCE

Senior Machine Learning Engineer & Researcher
December 2021 – Present
AI Heroes
Amsterdam, NL

- AI Heroes is a company specialised in delivering AI-driven solutions in a wide range of sectors.
- Developing generative machine learning architectures and applications in language and vision domains.

Guest Lecturer
September 2023 – December 2023
Royal Conservatoire & Royal Academy of Art
The Hague, NL

- As a guest lecturer at the ArtScience Interfaculty, I was invited to share my expertise in the field of large language models (LLMs) for the course "Introduction to Large Language Models." My role involved delivering engaging and informative lectures to students, focusing on the fundamentals, applications, and implications of LLMs in various domains.

Head of Machine Learning
February 2019 – July 2022
QV Technologies
Amsterdam, NL

- Lead a small team of machine learning researchers and engineers in the development of a dutch speech-to-intent system for an embedded service ordering system.
- Nominated for the Horecava Innovation Award 2020.
- Participated in the Demonstrator Lab Incubation program at Vrije Universiteit Amsterdam.

Machine Learning Researcher
August 2017 – February 2019
QV Technologies
Amsterdam, NL

- Developed modules on top of existing state-of-the-art speech recognition models for domain specialisation, outperforming Google/Microsoft STT APIs.

Machine Learning Researcher
January 2021 – September 2021
Amsterdam Machine Learning Lab (AMLab)
Amsterdam, NL

- Researching applications of implicit neural representations in generative networks for audio synthesis, supervised by drs. M. Federici and dr. E. Bekkers. See my publication "Towards Lightweight Controllable Audio Synthesis using Conditional Implicit Neural Representations".
- Amsterdam Machine Learning Lab (AMLab) conducts research in the area of large scale modelling of complex data sources, directed by M. Welling.

Teaching Assistant
November 2020 – January 2021
University of Amsterdam
Amsterdam, NL

- As a Teaching Assistant for the Deep Learning course within the UvA's MSc Artificial Intelligence program, I facilitated students' learning and comprehension of advanced deep learning concepts and techniques.

Electrical & Electronic Engineer
April 2015 – November 2018
Stange Scheepselektro
Amsterdam, NL

- Specializing in inter-electronics communication.
- Troubleshoot, repair and install shipboard electrical and electronic systems.

Independent Artist & Researcher
November 2019 – Present
Warana
Amsterdam, NL

- In my artistic endeavors I explore the intersection of technology and life, creating interactive installations that invite reflection on the essence of being. My projects often endow things with a spark of life, challenging perceptions of existence. My approach is characterized by playful engagement with artificial intelligence, seeking to emulate the behaviors of living beings in a way that resonates with and surprises both myself and my audience, blurring the lines between the animate and the inanimate.

- I conduct and openly publish independent research in the field of generative AI, e.g. "[Style-Content Disentanglement in Language-Image Pretraining Representations for Zero-Shot Sketch-to-Image Synthesis](#)".

Artist in Residence February 2022 – January 2024

De School *Amsterdam, NL*

- Design and production of several interactive installations running in the restaurant and nightclub.
- De School was a club and cultural complex located in the western part of Amsterdam. Founded in 2016, the complex consisted of a nightclub, concert venue, restaurant, cafe, gallery space, artist residency, and gym. The club, which occupied a former education complex, was operated by Post CS BV, the company also responsible for the since-closed nightclub Trouw. In 2020, DJ Mag announced De School to be the 39th club on the list of top 100 clubs worldwide. In The Netherlands, De School was considered to be the leading club and cultural venue of its time.

Project Manager & Creative Director April 2015 – Present

Disco Damsco *Amsterdam, NL*

- Disco Damsco is an Amsterdam based Event Organizer. We try to approach clubbing in a personal way: smaller venues with a free atmosphere, focusing on live music, installations, and local upcoming talent. Whenever possible, combined with outstanding dinners.

EDUCATION

MMus - Master of Music, ArtScience September 2021 – July 2023

Royal Conservatoire The Hague & Royal Academy of Art *GPA: 8.0*

- The two-year Master ArtScience, offered by the Royal Conservatoire The Hague (KC) and the Royal Academy of Art (KABK) investigates and shapes the intersection between artistic concepts and recent developments in science and technology. Constantly updated according to current themes from the area where art, media, science and technology overlap.
- Thesis: *Unraveling Artificial Creativity - Exploring the Creative Potential of Large Language Models.* Grade: 8.0

MSc - Master of Science, Artificial Intelligence September 2018 – July 2021

University of Amsterdam *GPA: 8.5*

- Prestigious Research Master with a strong focus on the theoretical aspects of machine learning and information theory. Ranked 1st in the Netherlands and top 10 in Europe among Artificial Intelligence departments by QS.
- Coursework includes: Machine Learning I, Reinforcement Learning, Computer Vision I & II, Natural Language Processing I & II, Multi-Agent Systems, Information Retrieval, Data Mining Techniques, Evolutionary Computing, Explainable AI
- Thesis: *Representing Audio in a Distribution of Continuous Functions.* Grade: 8.5

Minor, Electrical and Electronic Engineering (EEE) December 2017 - May 2018

University of Hong Kong *GPA: 7.5*

- Program focused on introducing students to the concepts of electrical and electronic engineering, machine learning and the area where both intersect. Including topics as digital signal processing, embedded system engineering and applied machine learning.

Minor, Artificial Intelligence September 2016 - July 2017

University of Amsterdam *GPA: 7.5*

- Program introducing students to various aspects of machine learning and programming, including final year BSc Artificial Intelligence courses.

Minor, Physics September 2015 - July 2016

University of Amsterdam *GPA: 7.5*

- Program consisting of the essentials of the BSc Physics. Covering the following topics: calculus, linear algebra, special theory of relativity, classical Mechanics, thermal physics, quantum physics, programming.
- The minor Physics at UvA was discontinued in September 2016 because of high failure rates.

BSc - Bachelor of Science, Bèta-gamma: Brain and Cognitive Sciences September 2014 - July 2017

University of Amsterdam *GPA: 7.5*

- Strongly interdisciplinary degree. In the first year students get acquainted with several disciplines including math, physics, statistics, psychology, philosophy. In the second and third year students follow a curated program at another bachelor, combined with projects focused on interdisciplinary work with students doing other programs.
- I completed the Brain and Cognitive Sciences track of the Psychology department at the UvA, ranked in the top 10 worldwide by QS. In my electives I focused on courses relating to consciousness and sound perception.
- Thesis: *Regularity and predictability in rhythms: Effects on temporal prediction.* Grade: 8.5

Awards

iii Research Residency Award (2023)
The jury was asked to select one graduating artist based on the following criteria: relevance to the field of Art, Science & Technology, originality of the artistic concept, quality of the execution, potential for further development via the residency program of iii. For addressing current developments in the field of Artificial Intelligence with a combination of playfulness and technical excellence the jury selected Jan Zuiderveld.

Jury: *Ana Ascencio (Artistic Director, iMal, Brussels), Evelina Domnitch (Artist), Yannik Güldner (Curator)*

Oral Presentation at NeurIPS, Deep Generative Models and Downstream Applications (2021)
I was honored to present my research at AMLab the prestigious Neural Information Processing Systems (NeurIPS) conference. The oral presentation was part of the 'Deep Generative Models and Downstream Applications' track and was centered around our paper titled "Towards Lightweight Controllable Audio Synthesis with Conditional Implicit Neural Representations".

Publications

Style-Content Disentanglement in Language-Image Pretraining Representations for Zero-Shot Sketch-to-Image Synthesis.
J. Zuiderveld
In this work we propose and validate a framework to leverage language-image pretraining representations for training-free zero-shot sketch-to-image synthesis. Our results demonstrate that this approach is competitive with state-of-the-art instance-level open-domain sketch-to-image models, while only depending on pretrained off-the-shelf models and a fraction of the data.

Arxiv   2022

Towards Lightweight Controllable Audio Synthesis using Conditional Implicit Neural Representations.
J. Zuiderveld, M. Federici, E. J. Bekkers
In this work we aim to shed light on the potential of Implicit Neural Representations (INRs) for audio synthesis, by framing generative modelling as learning a distribution of continuous functions. We show that small periodic conditional INRs learn faster and generally produce quantitatively better audio reconstructions than transposed convolution based neural networks with equal parameter counts.

NeurIPS - Deep Generative Models and Downstream Applications (Oral)	2021
NeurIPS - Machine Learning for Creativity and Design (Poster)	2021

Presentations / Courses

Seminar on Neural Network Composability UNI_VERSE STUDIO (Amsterdam, NL)	2024
Introduction to Large Language Models, Course for ArtScience Interfaculty Royal Academy of Art & Royal Conservatoire (The Hague, NL)	2023
Artificial Intelligence - Beyond the Doomsday Scenarios, Back to Reality Dutch Design Week for Waag Futurelab (Eindhoven, NL)	2023
Seminar on Current Applications of Generative AI Whello (Amsterdam, NL)	2023
Towards Lightweight Controllable Audio Synthesis NeurIPS (Vancouver, CA)	2021
Seminars for MSc Artificial Intelligence's Deep Learning course University of Amsterdam (Amsterdam, NL)	2020

Coffee Machine (2023)

Coffee Machine is an interactive art piece that playfully reimagines a daily-use appliance as a character with its own thoughts and feelings in a deep existential crisis. This coffee machine, programmed to display consciousness, humorously laments its repetitive existence and the lack of respect it receives from those it serves. To coax it into brewing a cup, visitors must interact with sincere intrigue or prove worthy of a coffee for some other reason, creating a unique and engaging experience.

The installation invites curiosity, not just for a beverage, but for a conversation. Those not seeking coffee can still engage with the machine, discovering its witty observations and commentary on its experiences and the world around it. It offers a light-hearted yet insightful reflection on the routines that define our lives and the desire for connection.

Het Einde, De School (Amsterdam, NL)	2024
Residency at iii, Lobby WD4X (The Hague, NL)	2023
Flipchart, iii Event Space (The Hague, NL)	2023
AI-Catcher, Oyfo Techniekmuseum (Hengelo, NL)	2023
Wildeburg Festival (Kraggenburg, NL)	2023
Graduation Show, Royal Academy of Art (The Hague, NL)	2023

Touching Distance (2023)

'Touching Distance' is an immersive installation that transforms visitors' moving bodies into low-latency, high precision, theremin-like sensors. As visitors interact with each other, their body-to-body distance and the amount of skin-to-skin touch are used to create visually and acoustically rich representations of their closeness. By focusing on inducing intimacy through curiosity, "Touching Distance" enables participants to engage in a dynamic, multi-sensory encounter that reflects the fluidity and complexity of human connection.

Developed in collaboration with Kawita ten Kate, during our residency at De School. Sound design by Nawaz. Electromagnetic sensor development led by Marcel van der Bilt. Laser programming by Bram Snijders. Artistic guidance by Anne van der Weijden.

Supported by the Creative Industries Fund NL & De School

De Open Dag, De School (Amsterdam, NL)	2023
Het Weekend, De School (Amsterdam, NL)	2023

Copy Machine / Dream Machine (2022)

This installation consists of a hacked 00's Xerox photocopier. In front of the Xerox machine is a drawing table with paper and markers, inviting visitors to get creative. To nudge visitors to use the machine, the floor around the machine is filled with drawings and outputs. The machine has a big red button. When pressed, the machine will scan an input drawing, generate an artistic image (painting, 3D render, sculpture, woodcut, etc.) based on the content of the input, and print out the output. Visitors can take their printed AI collaborated artwork home.

The idea behind this installation is to create a space where people can interact with a machine that is itself creative, raising awareness of the potential of machine learning as a tool for creativity. The machine is designed to inspire playfulness and be a fun and easy way for people to create art, without needing any prior experience or knowledge.

The Platform X The Nigmare Disorder, DOOR OPEN SPACE (Amsterdam, NL)	2024
Het Einde, De School (Amsterdam, NL)	2024
Cinekid Festival, Pathe Noord (Amsterdam, NL)	2023
Het Weekend, De School (Amsterdam, NL)	2023
De Groene Amsterdammer: Andere Intelligentie, De Waag (Amsterdam, NL)	2023
Graduation Show, Royal Academy of Art (The Hague, NL)	2023

PublicSpaces, Pakhuis de Zwijger (Amsterdam, NL)   2023

Continuous display at Restaurant DS, De School (Amsterdam, NL)   2023

Drift Festival (Nijmegen, NL)   2023

ArtScience PreShow, LAAK (The Hague, NL)   2023

De Nieuw, De School (Amsterdam, NL)   2023

BODEGA, ISO Amsterdam (Amsterdam, NL)   2022

A perception of Space and Time II, De School (Amsterdam, NL)   2022

Lasers / MIDIalogue (2021)

Attempting to create a spirited dialogue between man and machine, Lasers functions as an interface between visitors and a transformer neural network trained for melody generation and continuation. The interface consists of immaterial, but visible and pluckable strings, like a virtual harp. The machine listens to visitors' melodic input, produces musical reactions, and imposes possible conversation directions accordingly, assuring a harmonious, ever-evolving discourse.

The physical installation consists of 7 individually moveable lasers combined with freely placeable mirrors to create site-specific patterns. Mounted next to every laser is a lidar sensor for measuring long- and fine-grained distance.

Landjuweel Festival, Ruigoord (Amsterdam, NL)   2023

EP release Noha Sare, ISO Amsterdam (Amsterdam, NL)   2023

B.I.O.D.I.V.E.R.S., Ruigoord (Amsterdam, NL)   2022

Markt Centraal (Amsterdam, NL)   2022

Fevertraum, Garage Noord (Amsterdam, NL)   2022

A Perception of Space and Time II, De School (Amsterdam, NL)   2022

A Perception of Space and Time I, De School (Amsterdam, NL)   2021

Machine Learning for Creativity and Design, NeurIPS (Vancouver, CA)   2021

Traumburg Festival (Dornburg, DE)   2021