

Thomas Haferlach

CONTACT

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PROFILES

 [LinkedIn](#)  [GitHub](#)  [SoundCloud](#)  [Artist Page](#)

WORK EXPERIENCE

5/2018

Machine Learning Engineer at [Pixtunes](#)

| Berlin, Germany

Conceived and implemented a sophisticated generative music and music visualization system based *Autoencoders* and *Generative Adversarial Networks*. By training specialist models on individual instruments I am developing a Machine Learning orchestra.

9/2018

Foresight Researcher at [Envisioning](#)

| Remote

Researched [future trends of Artificial Intelligence](#) for the World Government Summit in Dubai drawing on academic papers, news and science fiction.

Subsequently investigated technologies that will impact sustainability in the medium- and long-term future for the GIZ (Deutsche Gesellschaft fuer Internationale Zusammenarbeit) in Germany.

5/2018 TILL 6/2018

Talk about Artificial Intelligence and Art at the Frontiere IA Conference at [MUTEK & Frontière IA](#)

| Montreal, Canada

Conceived the live visuals for the band "Die Wilde Jagd" by creating a system that visualizes audio using Deep Neural Networks. Subsequently got invited to give a talk on applications of AI with art at the Frontière IA conference in Montreal

3/2018 TILL 3/2018

Machine Learning and Music Hacklab: Swarm Animism at [transmediale - art & digital culture](#)

| Berlin, Germany

Conceived and performed a musical piece which used the smartphones of the attendees to listen and react by generating sounds. This resulted in a form of musical swarm intelligence which blurs the border between performer and participant.

1/2010 TILL 12/2018

Artist and Organizer at [Voodooohop](#)

| São Paulo, Brazil

As one of the founders of the multidisciplinary art collective Voodooohop, I became deeply involved with the art and music scene of São Paulo and Brazil. Guided by the principle of stimulating individual and joint freedom of expression, Voodooohop is enjoying international success with performances at events all over Europe, the USA, South America and a sold out physical release in Japan.

As a musician, I have created a unique live performance in which software I developed is responsible for generating harmony, melody and modifying the musical arrangements in real time.

3/2008 TILL 3/2016

Freelance Developer at SuperUber (Rio de Janeiro), Conception (Rio de Janeiro), TIM (São Paulo), ArtRio, City of São Paulo

| Brazil

Developed a range of interactive installations using technologies including machine learning, computer vision, distributed computing, sensors and data visualization.

1. With the help of facial tracking, a microphone and pitch analysis, participants could [paint on a blank canvas](#) using their voice and head movements.
2. An OpenGL based climbing game in which [a user climbs a mountain](#) using the movement of his own hands
3. For the 2014 FIFA World Cup, using real-time image augmentation, participants [took selfies with the official mascot](#) superimposed.

6/2007 TILL 10/2007

Research and publication of my bachelor thesis at [The University of Edinburgh](#)

| Edinburgh, United Kingdom

Implementation of my thesis [Evolving a Neural Model of Insect Path Integration](#) on a physical robot and publication in the journal "Adaptive Behavior"

10/2006 TILL 2/2007	<p>Software Engineer at Amazon Development Centre Scotland Edinburgh, United Kingdom</p> <p>Agile development of backend tooling, A/B testing and data mining for sales optimization. Technologies: Java, Spring Framework, Test-Driven Development, Agile Development, Python, Distributed Computing</p>
8/2004 TILL 7/2005	<p>Software Engineering Internship at Sun Microsystems Portland, Oregon</p> <p>Worked as a team developer on several inner process projects. Researched and developed a prototype failure analysis classification engine using technologies from the field of data mining and machine learning. Technologies: Java, Text Classification, Agile Development</p>
<p>EDUCATION</p> <p>1/2001 TILL 1/2006</p>	<p>The University of Edinburgh: Artificial Intelligence and Computer Science Bachelor of Science with <i>First class honors</i></p> <p>Modules: Artificial Intelligence, Computer Science, Mathematics, Physics, Advanced Vision, Computational Complexity, Intelligent Autonomous Robotics, Modelling and Simulation, Visualization, Neural Computation Extra: French, Human Communication Thesis: Evolving Neural Models of Path Integration</p>
1/1995 TILL 1/2001	<p>Albert Schweitzer Gymnasium, Kassel Abitur with grade 1.7</p>
<p>PUBLICATIONS</p> <p>1/2009</p>	<p>Low Level Approaches to Cognitive Control B. Webb, J. Wessnitzer, H. Rosano, M. Szenher, M. Zampoglou, T. Haferlach, P. Russo Spatial Temporal Patterns for Action-Oriented Perception in Roving Robots (book)</p> <p>We describe several neural network implementations of insect based methods of navigation. We present the preliminary results of modelling associative learning capabilities based on the insect mushroom bodies.</p>
3/2007	<p>Evolving a Neural Model of Insect Path Integration T. Haferlach, J. Wessnitzer, M. Mangan & B. Webb Adaptive Behaviour 15(3)</p> <p>We use a genetic algorithm to evolve a novel neural model of path integration, based on input from cells that encode the heading of the agent. We demonstrate the capabilities of the network under noisy conditions in simulation and on a robot.</p>
<p>AWARDS & PROJECTS</p> <p>11/2018</p>	<p>Traverse - A Virtual Reality Journey through the Origins of Language - Spatialized Sound Design Designed the spatialized soundscape and musical score for the "Traverse" VR experience funded by Google Jump Start.</p>
1/2017	<p>Harmonic Audio Mixing Visualization Tools Open-source project: An innovative way of analyzing and visualizing musical harmony using colors, waveforms and the harmonic circle. Technologies: React - Max/MSP - Ableton Live - Electron - Node.js</p>
6/2007	<p>Simulated Car Racing Competition (2nd Place) / IEEE Congress on Evolutionary Computation Trained a modular neural network architecture to control an agent that competed successfully in the IEEE CEC Simulated Car Racing Competition.</p>
5/2001	<p>Honorary Membership / German Physics Society</p>
LANGUAGES	<p>English (Native speaker) German (Native speaker) Portuguese (Full professional) French (Basic conversational)</p>
SKILLS	<p>Software Engineering: Agile Development, OOP and Functional Programming, Distributed Computing, Full Stack Development, Java, Javascript, Typescript, Python, SQL, NoSQL, Git, Node.js, Max/MSP, Audio Classification, Digital Signal Processing, Web Crawling, Digital Audio Workstations</p> <p>Machine Learning: Tensorflow, PyTorch (basic), Amazon Web Services, Neural Computation, Generative Models, Modelling and Simulation, Data Processing Pipelines, Data Visualization, Applying academic research in practice</p> <p>Soft Skills: Working independently, Conveying technical information to a non-technical Audience, Logical thinking and problem solving, Excellent written and oral communication skills</p>