Daniel Sabinasz

Cognitive Scientist and Computer Scientist

+49 151 2770 4361 | daniel@sabinasz.net | http://www.sabinasz.net | danielsabinasz | daniel-sabinasz | born May 4th, 1992

Education

Ruhr University Bochum

Bochum

Master of Science in Cognitive Science

October 2017 - August 2019

- **Average grade:** 1.0
- **Thesis:** A Neural Dynamic Model for the Perceptual Grounding of Combinatorial Concepts
- **Course categories:** Psychology, neuroscience, language, logic, philosophy of mind, computational modeling

Udacity (private online educational organization)

Artificial Intelligence Nanodegree

February 2017 - August 2017

- **Course categories:** constraint satisfaction problems, search, optimization, planning, adversarial search, logic and reasoning, bayesian networks, hidden markov models, deep learning, natural language processing
- **Projects:** sudoku solver, planning agent, adversarial game playing agent, sign language recognizer, dog breed classifier, time series predictor, machine translator

RWTH Aachen University

Aachen

Bachelor of Science in Computer Science

April 2011 - March 2015

- **Average grade:** 1.6
- **Thesis:** Content-Based Video Similarity Search using Feature Signatures
- **Course categories:** higher mathematics, theoretical computer sicence, applied computer science, technical computer science, artificial intelligence, machine learning, natural language processing, philosophy, physics (w/o exams)

Abtei Gymnasium

Duisburg

Abitur / High school diploma

September 2002 - June 2010

- Bilingual (German and English)
- **Average grade:** 1.5
- **Intensive courses:** mathematics, english, computer science, history

Selected IT skills

Programming languages	Python, Java, C/C++, JavaScript, PHP, (HTML, CSS)
Machine learning techniques	(convolutional, recurrent) neural networks, bayesian networks, hidden markov models, clustering, …
Frameworks	TensorFlow, NumPy, Scikit-Learn. OpenCV, SciPy, Pandas, Matplotlib, Docker, (Spring, Angular)
Software	Linux server stack, Photoshop, Adobe Illustrator, JetBrains IDEs, Git, LaTeX

Work experience

Institut für Neuroinformatik, Ruhr-Universität Bochum

Bochum

Research Assistant

October 2019 - today

- neural dynamic model for conceptual combination
- software for simulating neural dynamic architectures on the GPU and optimizing parameters such as to minimize a loss function

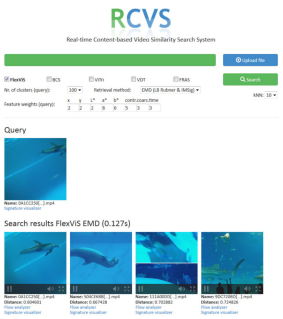
Impect GmbH

Köln

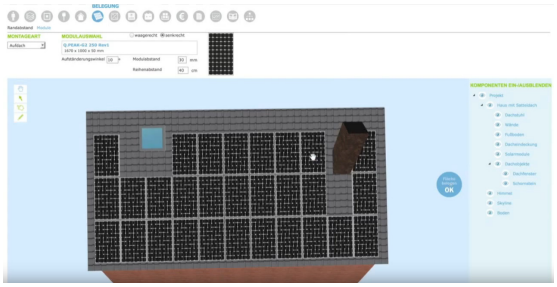
Lead Software Engineer

November 2015 - August 2017

- software for analyzing soccer 3D positional tracking data for discrete events (kick, trap, goal, …)
- software for extracting 3D positional tracking data from videos
- software for analyzing the gathered data to evaluate player performances numerically in various strategically relevant categories
- software to predict likely outcome of a match based on historical data
- database management software and user interfaces
- notable customers: ARD (TV station), Fox Sports (TV station), various German first league teams (FC Bayern München, Borussia Dortmund, Bayer 04 Leverkusen, …)
- part time: January 2015 - October 2015, September 2017 - August 2019



(a) Real-time content-based video similarity search system



(b) software for 3D planning of photovoltaic plants on house roofs

Figure 1: Impressions of selected work projects

Data Management and Data Exploration Group, RWTH Aachen *Aachen*

Research Assistant (Part Time) *April 2015 - September 2015*

- research on effective and efficient multimedia similarity search
- software for a content-based video search engine, which allowed the user to upload a video and retrieve visually similar videos from a large database (applicable, e.g., for copyright infringement detection in social media)

Nuri Design *Usingen*

Software Engineer and Executive Partner (Part Time) *October 2012 - June 2015*

- software for 3D planning of photovoltaic plants on house roofs
- subsequent physical simulation of the plant over time, incorporating sun trajectory, shadows cast by objects on the roof, shadows cast by mountains, local solar irradiation, and physical characteristics of the photovoltaic cells
- notable customers: Solarwatt GmbH, Focus Online

Curo Design *Duisburg*

Web Developer (Part Time) *December 2009 - September 2012*

- web design
- web development
- database development

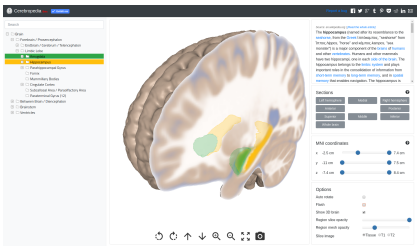
Publications

Papers

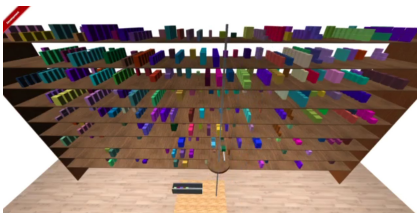
- Sabinasz, D. & Schöner, G. (accepted, 2022). A neural dynamic model perceptually grounds nested noun phrases. In *Proceedings of the 43th annual conference of the cognitive science society*. Austin, TX: Cognitive Science Society
- Sabinasz, D., Richter, M., Lins, J., & Schöner, G. (2020). Grounding spatial language in perception by combining concepts in a neural dynamic architecture. In *Proceedings of the 42th annual conference of the cognitive science society*. Austin, TX: Cognitive Science Society. Retrieved from https://cogsci.mindmodeling.org/2020/papers/0112/0112.pdf
- Uysal, M. S., Sabinasz, D., & Seidl, T. (2016). Approximation-based efficient query processing with the earth mover's distance. In *International Conference on Database Systems for Advanced Applications* (pp. 165–180). Springer. Retrieved from https://link.springer.com/chapter/10.1007/978-3-319-32049-6_11
- Uysal, M. S., Beecks, C., Sabinasz, D., & Seidl, T. (2015c). Large-scale efficient and effective video similarity search. In *Proceedings of the 2015 Workshop on Large-Scale and Distributed System for Information Retrieval* (pp. 3–8). ACM. retrieved from https://dl.acm.org/doi/abs/10.1145/2809948.2809950
- Uysal, M. S., Beecks, C., Sabinasz, D., & Seidl, T. (2015b). Felicity: a flexible video similarity search framework using the earth mover's distance. In *International Conference on Similarity Search and Applications* (pp. 347–350). Springer. Retrieved from https://link.springer.com/chapter/10.1007/978-3-319-25087-8_34
- Uysal, M. S., Beecks, C., Sabinasz, D., & Seidl, T. (2015a). Effective content-based near-duplicate video detection. In *2015 IEEE International Symposium on Multimedia (ISM)* (pp. 254–257). IEEE. retrieved from https://ieeexplore.ieee.org/abstract/document/7442336/

Posters

- Sabinasz, D., Richter, M., Lins, J., & Schöner, G. (2019). How productivity and compositionality may emerge from a neural dynamics of perceptual grounding. In *Proceedings of the 41st annual conference of the cognitive science society*. Austin, TX: Cognitive Science Society. Retrieved from https://www.sabinasz.net/scientific_publications/How_Productivity_and_Compositionality_May_Emerge_from_a_NeuralDynamics_of_Perceptual_Grounding.svg



(a) brain.sabinasz.net



(b) Supermarket robot

(c) Behind the Sun

Figure 2: Impressions of selected free-time projects

BLOG ARTICLES

- Sabinasz, D. (2019). Introduction to evolutionary psychology. Retrieved from https://www.sabinasz.net/introduction-to-evolutionary-psychology
- Sabinasz, D. (2018). Building a content-based multimedia search engine. Retrieved from https://www.sabinasz.net/building-content-based-multimedia-search-engine-quantifying-similarity
- Sabinasz, D. (2017c). Robot localization. Retrieved from https://www.sabinasz.net/robot-localization-recursive-bayesian-estimation
- Sabinasz, D. (2017d). Why the chinese room argument is flawed. Retrieved from https://www.sabinasz.net/why-chinese-room-argument-flawed
- Sabinasz, D. (2017b). Gödel's incompleteness theorem and its implications for artificial intelligence. Retrieved from https://www.sabinasz.net/godels-incompleteness-theorem-and-its-implications-for-artificial-intelligence
- Sabinasz, D. (2017a). Deep learning from scratch: theory and implementation. Retrieved from https://www.deepideas.net/deep-learning-from-scratch-theory-and-implementation. (Views as of August 2019: 43,413)

Selected free-time projects

brain.sabinasz.net

AN ONLINE 3D BRAIN ENCYCLOPEDIA — *October 2017 – today*

- feature to view an MNI 3D brain from arbitrary perspectives and take slices
- feature to view 3D models of a large number of brain areas superimposed on the whole-brain model

Supermarket robot

A ROBOT INTENDED FOR AN AUTOMATED SUPERMARKET — *May 2017 – June 2017*

- software that transforms a buying list provided by a customer into end-effector trajectories of a robot that collects the items from a shelf with a gripper arm and puts them into a box
- hardware interface to stepper motors using arduino and raspberry pi

Behind the Sun

A BROWSER-BASED STRATEGY GAME (CO-DEVELOPER) — *2008 - 2010*

- players colonize planets, build cities and wage wars
- community of around 1000 players
- source code available at https://code.google.com/archive/p/btsun

Voluntary work

Sonntagsdialoge

Lübeck

AID TO REFUGEES — *Oct 2021 – today*

- IT courses for refugees
- IT support for refugees
- website development

Project CAROLA

WEB DEVELOPER — *2020*

- website development

Reclue.com

SOFTWARE DEVELOPER — *April 2015 – August 2017*

- knowledge representation algorithms

The Zeitgeist Movement

Activist, Software developer *Oct 2011 – Jun 2015*

- portal software development
- server administration
- website development
- activism

Open Source Ecology

web developer *2011*

- website development

German Pirate Party

Activist, Software developer *Apr 2009 – Oct 2010*

- co-chairman of NRW youth organization
- software development
- website development
- activism