



Name: Fabian Schönfeld
Born: July 25th, 1984 in Nuremberg

Address: Oskar-Hoffmann-Str. 109
City: 44789, Bochum, Germany

Nationality: German

Email: fabian.schoenfeld@ini.rub.de

Phone: 0234 - 917 95 179

Mobile: 0152 - 58 27 52 51

Relevant adjectives: curious, flexible, (self-)critical, self-responsible, organized, open/sociable.

Education

Ruhr-University Bochum
Since June 2016

Postdoctoral researcher

- Modeling the mammalian hippocampus using unsupervised learning methods.
- Modeling rodent behavior using reinforcement learning and SLAM techniques.

Ruhr-University Bochum
August 2010 – June 2016

PhD in computational neuroscience

- Thesis titled *"A computational model of spatial encoding in the hippocampus"*.
- Using unsupervised learning (slow feature analysis) to model cellular activity in the rodent hippocampus.
- Extensive cooperation with PhD students from other groups and disciplines (e.g. neurophysiology, biology, psychology).

FAU Chair for Computer Graphics
October 2009 – February 2010

Research assistant

- Publishing of my *"Studienarbeit"* (~Bachelor thesis) at the HPCS 2010 in Caen, France.

Friedrich-Alexander University
October 2004 – October 2009

Diploma in computer science

- Computer science with secondary subject engineering.
- Diploma thesis: *"Interactive debugging tool for the PE physics engine"*.
- *"Studienarbeit"* (~Bachelor thesis++): *"A parallel 3-SAT solver on CUDA"*.
- Focus areas during *"Hauptstudium"* (~Masters): Artificial Intelligence, Computer Graphics, Programming languages and methods, Engineering.

Skills & Qualifications

Languages	German (native), English (fluent), French (elementary)	
Programming	Python	(fluent)
	C/C++, CUDA, Java, VHDL	(proficient)
	Assembler, Scheme, Prolog	(familiar)
Software	Office	Windows, Linux, MS/Open Office Suite.
	Workflow	Trello, git, SVN, LaTeX, Jabref, Discord, Slack.
	Code	Sublime Text 2, PyCharm, Visual Studio, Xilinx ISE Design Suite.
	Graphics	3Ds Max, Blender, Inkscape, OpenGL.

Awards and certificates

- ❖ Leading intercultural work groups and teams. (workshop, Bochum, 2017)
- ❖ Career and management (C&M) workshop “NeuroCareer Maker” (workshop, Bochum, 2017)
- ❖ C&M workshop “Karriereentwicklung und Chancengleichheit” (workshop, Bochum, 2017)
- ❖ Advanced scientific programming in Python (summer school, Zurich, 2013)
- ❖ Intercultural comm.: How to work together in an inter. team (workshop, Bochum, 2012)
- ❖ G-Node workshop on neuronal GPU computing (workshop, Munich, 2012)
- ❖ Science communication and media skills training (workshop, Bochum, 2011)
- ❖ Scientific writing DAAD spring school (workshop, Bochum, 2011)
- ❖ Outstanding performance in Algorithm Design (award, FAU Erlangen, 2005)

Administrative roles

- ❖ Student representative on the IGSN (grad. school) PhD committee. (Since May 2017)
- ❖ Part of our group’s hiring process and job interviews. (First half of 2017)
- ❖ Student representative at the INI management board. (Since Jan. 2016)
- ❖ Part of our SFB (“Sonderforschungsbereich”) grant reviews. (2013, 2014, 2015, 2018)

Outreach

- ❖ Talk on comp. neuroscience at the IGSN *Brain Café* for the general public. (April 2017)
- ❖ Supervision of several high school internships. (2015 - 2016)
- ❖ Talk as part of the assessment of our SFB (“Sonderforschungsbereich”). (Jan. 2014)
- ❖ Robotics demo of our work at the IGSN *Brain Day* 2013. (Sept. 2013)
- ❖ Organizing an IGSN symposium on computational neuroscience. (Oct. 2013)
- ❖ Talk on comp. neuroscience at the IGSN *Graduation Day* 2012. (Dec. 2012)
- ❖ Designing a modular Lego brain for the public *Extraschicht*. (June 2012)

Extracurricular

- ❖ Organizing regular board game events for our work group. (Since 2013)
- ❖ Organizing social activities for the institute’s yearly three-day retreat. (2014 and 2017)
- ❖ Introducing group-wide standards for writing code and documentation. (2012)

Personal Information

Hobbies and interests: Archery, board games¹, bouldering, hardware (FPGA) programming, machine learning, modeling (3D), painting (miniatures), programming, reading², swimming, video games, yoga/Pilates.

¹recommended: Codenames, Infinity, Mysterium, Pandemic.

²recommended: *Foucault’s Pendulum* (Umberto Eco), *Infinite Jest* (David Foster Wallace), *Meditations* (Marcus Aurelius), *Momo* (Michael Ende).

Teaching Experience

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|----------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Ruhr-University Bochum
December 2017 | Workshop on Laplacian Eigenmaps <ul style="list-style-type: none">- Research for lecture script and providing programming exercises. |
| Ruhr-University Bochum
Summer 2015, 2016, 2017 | “Scientific Computing with Python” (two week course) <ul style="list-style-type: none">- Planning and supervision of the course in a team of PhD students. |
| Ruhr-University Bochum
September 2012 – June 2013 | Bachelor thesis supervision <ul style="list-style-type: none">- Supervision of three bachelor students during their thesis work.- Side projects to port our <i>in silico</i> simulations to the ePuck robot. |
| Schülerkolleg Schwabach
March 2007 – June 2010 | Tutor for high school students <ul style="list-style-type: none">- First teaching experience as a tutor for mathematics and physics. |
| Friedrich-Alexander University
October 2007 – February 2008 | Teaching assistant, “Algorithmik” class <ul style="list-style-type: none">- Java programming for bachelor students as part of a team of TAs. |
| FAU Engineering Department
April 2008 – July 2008 | Java project advisor <ul style="list-style-type: none">- Profiling and structuring Java code for a local engineering project. |

Academic Publications

Articles

Draht, F., Zhang, S., Rayan, A., **Schönfeld, F.**, Wiskott, L., & Manahan-Vaughan, D. (2017) *Experience-dependency of reliance on local visual and idiothetic cues for spatial representations created in the absence of distal information*. *Frontiers in Behavioral Neuroscience*, 11(92).

Fabian Schönfeld (2016) *A computational model of spatial encoding in the hippocampus*. PhD thesis. URN: urn:nbn:de:hbz:294-50377

Fabian Schönfeld and Laurenz Wiskott (2015) *Modeling place field activity with hierarchical slow feature analysis*. *Frontiers in Computational Neuroscience*, 9:51.

Fabian Schönfeld (2014) *Theoretical neuroscience: Finding your way into the light*. IGSN Report - Integration and representation of sensory processes, 47-49.

Sijie Zhang, **Fabian Schönfeld**, Laurenz Wiskott, and Denise Manahan-Vaughan (2014) *Spatial representations of place cells in darkness are supported by path integration and border information*. *Frontiers in Behavioral Neuroscience*, 8:222.

Fabian Schönfeld and Laurenz Wiskott (2013) *RatLab: An easy to use tool for place code simulations*. *Frontiers in Computational Neuroscience*, 7:104.

Fabian Schönfeld, Quirin Meyer, Marc Stamminger and Rolf Wanka (2010) *3-SAT on CUDA: Towards a massively parallel SAT solver*. *High Performance Computing and Simulation (HPCS)*, Caen, France, 306-313.

Abstracts & posters

Fabian Schönfeld and Laurenz Wiskott (2012) *Sensory integration of place and head-direction cells in a virtual environment*. *NeuroVisionen 8*, Aachen, Germany.

Fabian Schönfeld and Laurenz Wiskott (2012) *Sensory integration of place and head-direction cells in a virtual environment*. 8th FENS Forum of Neuroscience, Barcelona, Spain.

Fabian Schönfeld (2010) *Der Physik-Engine Editor ped*. *Informatiktage 2010*, Bonn, 97-100.

Prof. Dr. Laurenz Wiskott

Institute for Neural Computation
Head of the "Theory of Neural Systems" group
Phone: (+49) 234 - 32 - 27997
Email: laurenz.wiskott@ini.rub.de
Ruhr-University Bochum

Prof. Dr. Denise Manahan-Vaughan

Department of Neurophysiology
Dean of studies International Graduate School of Neuroscience (IGSN)
Phone: (+49) 234 - 32 - 22042
E-Mail: dmv-igsn@ruhr-uni-bochum.de
Ruhr-University Bochum